

CONSUMER ENERGY BANKS

SOLUNA™



BATTERY

It used to be believed that the storage of surplus energy is a solution for those who live in remote places and do not have access to the power grid, but with the development of technology, this classification becomes somewhat simplified. Home energy storage is also chosen by people who value independence from the ideological point of view - the changing legal regulations regarding settlements with operators do not provide a certainty on which energy independence can be built, which is why more and more installations are equipped with an additional, specific „helper“, which is battery. Then, regardless of whether the reason for dissatisfaction with the network connection is the fact of giving away one's energy under unfavorable conditions or a mundane network failure; The benefits of photovoltaics can be felt at any time of the day or night.



HYBRID INVERTERS

Therefore, a hybrid installation becomes the ideal solution. The Afore Aton hybrid inverter (15-year warranty) or Solinteg (5-year warranty) and compatible Soluna batteries (10-year warranty) are able to meet the energy needs of most households. The benefit of having a hybrid installation is absolute user safety, based on three pillars. Depending on the adopted mode of operation of the inverter, the energy produced by the photovoltaic modules and then converted by the inverter into alternating current first satisfies the so-called current consumption, then transfers surpluses to the energy storage to use it, e.g. at night, and finally sends the remaining overproduction to the grid based on the agreed settlement system with the recipient.

Regardless of what motivation - ideological, ecological or economic - drives the future owners of home mini power plants, the hybrid installation is the unrivaled leader among the available options. It allows you to enjoy the full possibilities offered by photovoltaics.



BATTERY

5-15 kWh





Low voltage battery LFP 5 kWh



WARRANTY

10-year warranty as standard



LOW VOLTAGE BATTERY

Dedicated to a single-phase inverter



LONG LIFE CYCLE

Rechargeable no less than 6000 cycles



LFP TECHNOLOGY

Battery made in LFP technology



PARALLEL WORK

Possibility to connect up to 4 batteries to one parallel box



BATTERY PACK EFFICIENCY

High battery pack efficiency above 95%



INTELLIGENT MANAGEMENT

Possibility of remote management



MODERN DESIGN

Housing that fits into any interior

Electrical parameters		Battery 5 kWh
Battery type	-	LFP
Total energy capacity	kWh	5.12
Usable energy capacity	kWh	4.6
Battery capacity (nominal)	Ah	100
Voltage range (usable)	V	48~57.6
Nominal voltage	V	51.2
Charge / discharge current (nominal)	A	50 / 50
Continuous charging current	A	75
Continuous discharging current	A	100
Battery power	kW	5
Depth of discharge (DOD)	%	90
Cycle life	-	6000 ≤
DC disconnect	-	Contactora, Fuse
BMS		Battery 5 kWh
Communication	-	CAN
General parameters		Battery 5 kWh
Protection rating	-	IP54
Warranty	-	10 years
Operating temperature	°C	-10 ~ +50
Operating temperature (recommended)	°C	+15 ~ +30
Humidity	%	5 ~ 95
Altitude	m	< 2000
number of batteries connected in parallel	pcs.	12
Cooling	-	Natural convection
Weight	kg	51
Dimensions (width x height x depth)	mm	595 x 438 x 165
Reliability & Certification		
CE, RoHS, UL 1642, UN38.3		

* The above parameters are indicative and subject to change. Detailed information at the address - www.soluna.com.pl



High voltage battery LFP 6-15 kWh



WARRANTY

10-year warranty as standard



HIGH VOLTAGE BATTERY

Dedicated to a three-phase inverter



LONG LIFE CYCLE

Rechargeable no less than 6000 cycles



LFP TECHNOLOGY

Battery made in LFP technology



PARALLEL WORK

Possibility to connect up to 4 batteries to one parallel box



DISCHARGE LEVEL

Utilization of 90% of the available capacity



INTELLIGENT MANAGEMENT

Possibility of remote management



MODERN DESIGN

Housing that fits into any interior

Electrical parameters		Battery 6 kWh	Battery 10 kWh	Battery 15 kWh
Battery type	-	LFP		
Total energy capacity	kWh	6	10	15
Usable energy capacity	kWh	5.4	9	13.5
Battery capacity (nominal)	Ah	40		
Voltage range (usable)	V	134.4 - 168	235.2 - 294	336 - 420
Nominal voltage	V	153.6	268.8	384
Charge voltage	V	168	294	420
Discharge cut-off voltage	V	134.4	235.2	360
Max. charge/discharge current	A	40 / 40		
Battery power	kW	6.1	10.8	15.4
Depth of discharge (DOD)	%	90		
Cycle life	-	6000 ≤		
DC disconnect	-	Contactor, Fuse		
BMS		Battery 6 kWh	Battery 10 kWh	Battery 15 kWh
Communication	-	CAN		
Parametry ogólne		Battery 6 kWh	Battery 10 kWh	Battery 15 kWh
Protection rating	-	IP54		
Warranty	-	10 years		
Operating temperature	°C	-10 ~ +50		
Operating temperature (recommended)	°C	+15 ~ +30		
Humidity	%	5 - 95		
Altitude	m	< 2000		
number of batteries connected in parallel	pcs.	10		
Cooling	-	Natural convection		
Weight	kg	74	105	143
Dimensions (width x height x depth)	mm	654 x 971 x 227		654 x 1205 x 227
Reliability & Certification				
CE, IEC 62619, UL1642, UL 1973, UN 38.3, UL9540A				

* The above parameters are indicative and subject to change. Detailed information at the address - www.soluna.com.pl

A device that connects the batteries

PARALLEL BOX





HV Parallel Box



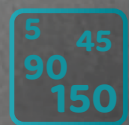
WARRANTY

10-year warranty as standard



PARALLEL WORK

Possibility to install 3 devices in cascade



LARGE RANGE OF CONFIGURATIONS

Capacity of stored energy from 5 kWh to 150 kWh



INTELLIGENT MANAGEMENT

Possibility of remote management



COMPACT HOUSING

Small housing of the device



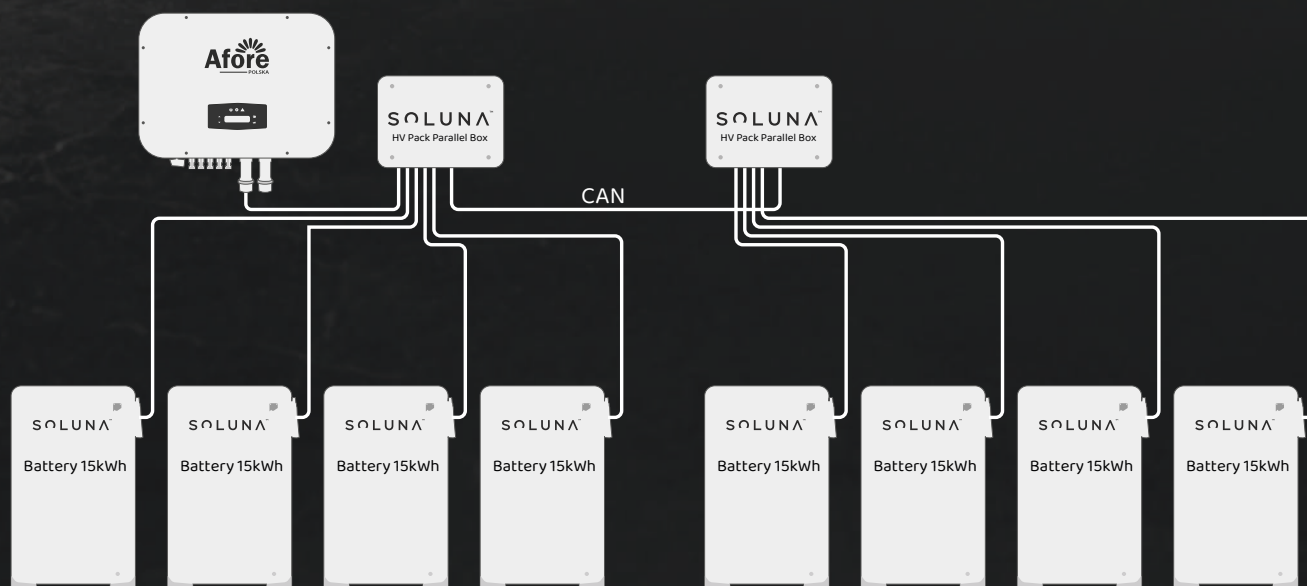
MODERN DESIGN

Housing that fits into any interior

PARALLEL BOX is a device dedicated to AFORE or SOLINTEG hybrid inverters whose owners have additional appetites for storing the energy produced. PARALLEL allows you to combine two to four pieces of batteries that will create a modular energy storage. For example: SOLUNA batteries in our offer have a maximum capacity of 15 kWh, so using PARALLEL we can construct a warehouse with a total capacity of 60 kWh.

Electrical parameters		HV Parallel Box	
Working voltage	VDC	530	
Max. input current (4x)	A	50	
Max. output current	A	175	
Input wires (4)	mm2	10	
Output wires	mm2	35	
General parameters		HV Parallel Box	
General operating temperature range	°C	-20 ~ +50	
Battery operating temperature range	°C	-20 ~ +60	
Humidity	%	5-95	
Communication port type	-	RS45 (P)	
Input communication port	pcs.	4	
Output communication port	pcs.	2	
Others		HV Parallel Box	
Protection rating	-	IP54	
Warranty	-	10 years	
Weight	kg	3.5	
Number of batteries supported per parallel	pcs.	4	
Number of batteries supported per inverter	pcs.	12 (battery 5 kWh)	10 (battery 6/10/15 kWh)
Dimensions (width x height x depth)	mm	332.4 x 232.4 x 86.2	

* The above parameters are indicative and subject to change. Detailed information at the address - www.soluna.com.pl

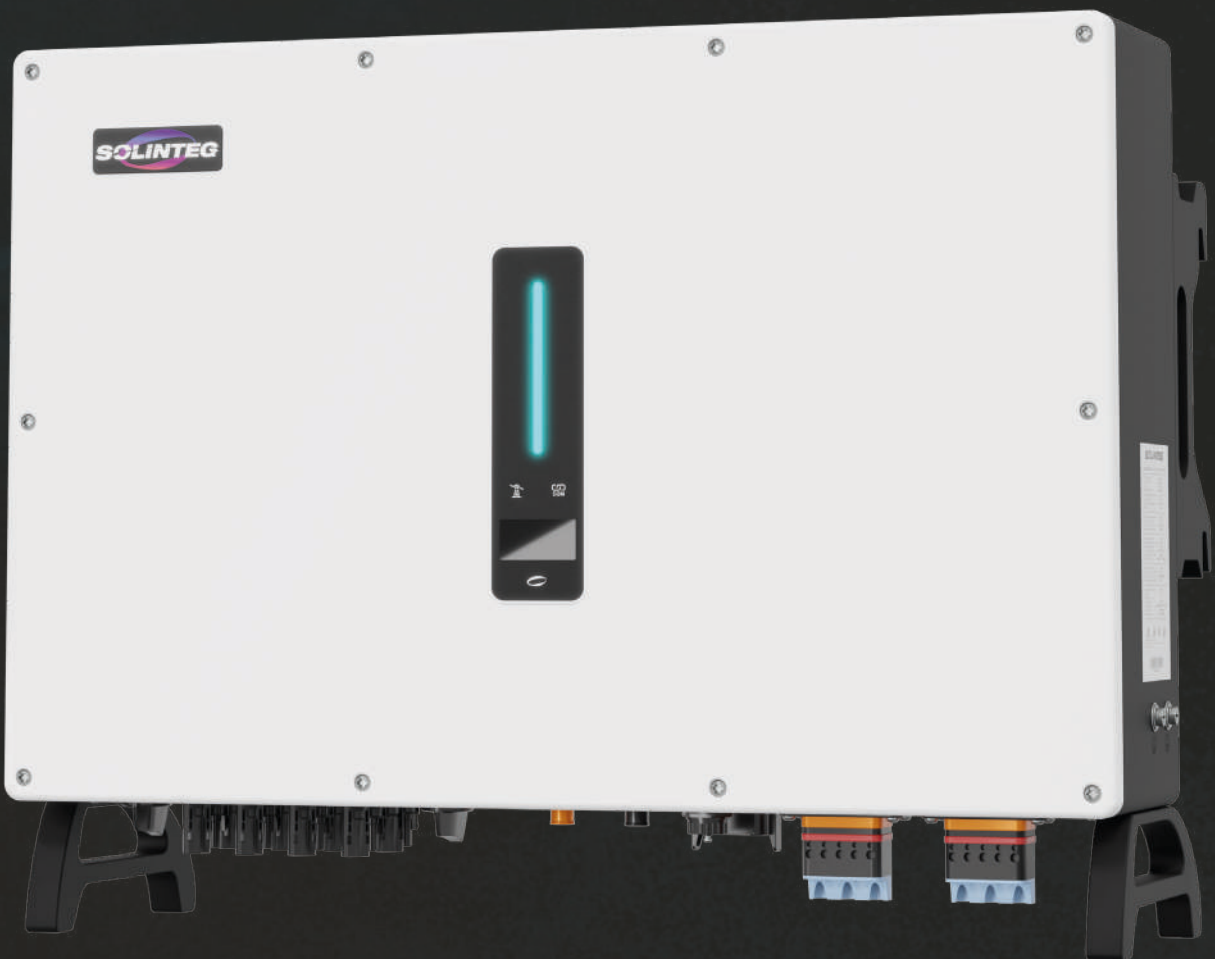


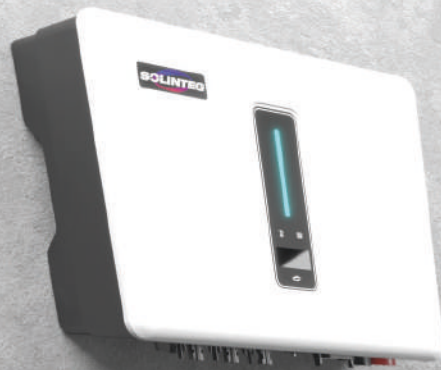
1 Parallel Box supports up to 4 Soluna batteries of the same capacity

HYBRID INVERTER

SOLINTEG

4-40kW





Three-phase hybrid inverter SOLINTEG 4-12 kW



WARRANTY

5-year warranty as standard



200% POWER FOR 60S

Prevention of inverter overload when starting devices



LOW START VOLTAGE

Voltage excitation at 135V



HIGH EFFICIENCY

98.2% charge and discharge efficiency



UNBALANCE PHASE

Supporting an uneven load of 110%



PARALLEL WORK

Possibility of parallel operation of 10 devices



„BREATHING” LIGHT

Simply displays the current status of the device



Current 25A

Electrical parameters		MHT-4K-25	MHT-5K-25	MHT-6K-25	MHT-8K-25	MHT-10K-25	MHT-12K-25	
Max. power	kW	6.0	7.5	9.0	12.0	15.0	18.0	
Start voltage	V	135						
Max. input voltage DC	V	1000						
Nominal input voltage**	V	620						
Range voltage MPPT***	V	120 - 950			200 - 950			
Number MPPT	-	2						
Number of MPPT inputs	pcs.	1 / 1						
Max. input current	A	15 x 2						
Max. short-circuit current	A	20 x 2						
Battery		MHT-4K-25	MHT-5K-25	MHT-6K-25	MHT-8K-25	MHT-10K-25	MHT-12K-25	
Battery voltage range	V	135 - 750						
Max. charge / discharge current	A	25 / 25						
Battery type	-	Lithium (BMS)						
Grid		MHT-4K-25	MHT-5K-25	MHT-6K-25	MHT-8K-25	MHT-10K-25	MHT-12K-25	
Nominal output power	kW	4.0	5.0	6.0	8.0	10.0	12.0	
Max. apparent output power	kVA	4.4	5.5	6.6	8.8	11.0	13.2	
Max apparent input power****	kVA	8.0	10.0	12.0	16.0	16.5		
Max. battery charging power	kW	4.0	5.0	6.0	8.0	10.0	12.0	
Nominal voltage	V	3L / N / PE220 / 380 ; 230 / 400 ; 240 / 415						
Nominal frequency	Hz	50 / 60						
Max. input current	A	6.7	8.3	10.0	13.3	16.5	20.0	
Power factor	%	1 (-0.8 / +0.8)						
THD	%	< 3						
DCI	%	< 0.5						
Back-up power		MHT-4K-25	MHT-5K-25	MHT-6K-25	MHT-8K-25	MHT-10K-25	MHT-12K-25	
Nominal output power	kW	4.0	5.0	6.0	8.0	10.0	12.0	
Max. apparent power output	kVA	4.4	5.5	6.6	8.8	11.0	13.2	
Max. output current	A	6.7	8.3	10.0	13.3	16.5	20.0	
Switching time	ms	< 10						
Nominal output voltage	V	3 / N / PE ; 220 / 380 ; 230 / 400 ; 240 / 415						
Nominal output frequency	Hz	50 / 60						
Peak output power*****	kVA / s	8, 60	10, 60	12, 60	16, 60	20, 60	20, 60	
THD	%	< 3						
Efficiency		MHT-4K-25	MHT-5K-25	MHT-6K-25	MHT-8K-25	MHT-10K-25	MHT-12K-25	
Max. efficiency	%	98.1			98.2			
Efficiency EURO	%	97.3			97.4			
Protection		MHT-4K-25	MHT-5K-25	MHT-6K-25	MHT-8K-25	MHT-10K-25	MHT-12K-25	
DC reverse polarity protection	-	Yes						
Battery input reverse connection protection	-	Yes						
Insulation resistance protection	-	Yes						
Surge protection	-	Yes						
Over-temperature protection	-	Yes						
Residual current protection	-	Yes						
Islanding protection	-	Yes						
AC over-voltage protection	-	Yes						
Overload protection	-	Yes						
AC short-circuit protection	-	Yes						
Over voltage category	-	PV II ; AC III						
General parameters		MHT-4K-25	MHT-5K-25	MHT-6K-25	MHT-8K-25	MHT-10K-25	MHT-12K-25	
Dimensions (width x height x depth)	mm	534 x 418 x 210						
Weight	kg	26.0						
Warranty	-	5 years						
Protection rating	-	IP65						
Standby Self-consumption	W	< 15						
Topology	-	Transformerless						
Operating temperature range	°C	-30 ~ +60						
Humidity	%	0 ~ 100						
Altitude	m	3000 (power derating > 3000m)						
Cooling	-	Natural convection						
Noise level	dB	< 25						
Display	-	OLED & LED						
Communication	-	CAN, RS485, WiFi / LAN (Optional)						
Reliability & Certification		IEC/EN 62109, IEC/EN 61000, EN50549-1, TOR generator type A, VDE-AR-N-4105						

* The above parameters are indicative and subject to change. Detailed information at the address - www.soluna.com.pl.

** Max. operating DC voltage is 950V, max. withstanding DC voltage is 1000V.

***The maximum MPPT voltage and operating voltage upper limit will be reduced to 900 V when inverter connects and works with battery.

**** Max apparent power from the grid means the maximum power imported from the utility grid used to satisfy the backup loads and charge the battery.

***** The output power will exceed the rated value only when the power in the PV array is sufficient, and the duration of the overload is related to the overload power.



Three-phase hybrid inverter SOLINTEG 10-20 kW



WARRANTY

5-year warranty as standard



200% POWER FOR 60S

Prevention of inverter overload when starting devices



LOW START VOLTAGE

Voltage excitation at 135V



HIGH EFFICIENCY

98.4% charge and discharge efficiency



UNBALANCE PHASE

Supporting an uneven load of 110%



PARALLEL WORK

Possibility of parallel operation of 10 devices



„BREATHING” LIGHT

Simply displays the current status of the device



Current 40A

Electrical parameters		MHT-10K-40	MHT-12K-40	MHT-15K-40	MHT-20K-40
Max. power	kW	15.0	18.0	22.5	30.0
Start voltage	V	135			
Max. input voltage DC	V	1000			
Nominal input voltage**	V	620			
Range voltage MPPT***	V	200 - 950			
Number MPPT	-	2			
Number of MPPT inputs	pcs.	2 / 2			
Max. input current	A	30 x 2			
Max. short-circuit current	A	40 x 2			
Battery		MHT-10K-40	MHT-12K-40	MHT-15K-40	MHT-20K-40
Battery voltage range	V	135 - 850			
Max. charge / discharge current	A	40 / 40			
Battery type	-	Lithium (BMS)			
Grid		MHT-10K-40	MHT-12K-40	MHT-15K-40	MHT-20K-40
Nominal output power	kW	10.0	12.0	15.0	20.0
Max. apparent output power	kVA	11.0	13.2	16.5 / 15.0 ¹⁾	22.0
Max apparent input power****	kVA	20.0	24.0	30.0	30.0
Max. battery charging power	kW	10.0	12.0	15.0	20.0
Nominal voltage	V	3L / N / PE220 / 380; 230 / 400; 240 / 415			
Nominal frequency	Hz	50 / 60			
Max. input current	A	16.5	20.0	25.0 / 21.7 ²⁾	33.5
Power factor	%	1 (-0.8 / +0.8)			
THD	%	< 3			
DCI	%	< 0.5			
Back-up power		MHT-10K-40	MHT-12K-40	MHT-15K-40	MHT-20K-40
Nominal output power	kW	10.0	12.0	15.0	20.0
Max. apparent power output	kVA	11.0	13.2	16.5	22.0
Max. output current	A	16.5	20.0	25.0	33.5
Switching time	ms	< 10			
Nominal output voltage	V	3 / N / PE; 220 / 380; 230 / 400; 240 / 415			
Nominal output frequency	Hz	50 / 60			
Peak output power*****	kVA / s	20, 60		25, 60	
THD	%	< 3			
Efficiency		MHT-10K-40	MHT-12K-40	MHT-15K-40	MHT-20K-40
Max. efficiency	%	98.4			
Efficiency EURO	%	97.5			
Protection		MHT-10K-40	MHT-12K-40	MHT-15K-40	MHT-20K-40
DC reverse polarity protection	-	Yes			
Battery input reverse connection protection	-	Yes			
Insulation resistance protection	-	Yes			
Surge protection	-	Yes			
Over-temperature protection	-	Yes			
Residual current protection	-	Yes			
Islanding protection	-	Yes			
AC over-voltage protection	-	Yes			
Overload protection	-	Yes			
AC short-circuit protection	-	Yes			
Over voltage category	-	PV II ; AC III			
General parameters		MHT-10K-40	MHT-12K-40	MHT-15K-40	MHT-20K-40
Dimensions (width x height x depth)	mm	534 x 418 x 210			
Weight	kg	28			31
Warranty	-	5 years			
Protection rating	-	IP65			
Standby Self-consumption	W	< 15			
Topology	-	Transformerless			
Operating temperature range	°C	-30 ~ +60			
Humidity	%	0 ~ 100			
Altitude	m	3000 (power derating > 3000m)			
Cooling	-	Smart fan			
Noise level	dB	< 40			
Display	-	OLED & LED			
Communication	-	CAN, RS485, WiFi / LAN (Optional)			
Reliability & Certification					
IEC/EN 62109, IEC/EN 61000, EN50549-1, TOR generator type A, VDE-AR-N-4105					

* The above parameters are indicative and subject to change. Detailed information at the address - www.soluna.com.pl.

** Max. operating DC voltage is 950V, max. withstanding DC voltage is 1000V.

***The maximum MPPT voltage and operating voltage upper limit will be reduced to 900 V when inverter connects and works with battery.

**** Max apparent power from the grid means the maximum power imported from the utility grid used to satisfy the backup loads and charge the battery.

***** The output power will exceed the rated value only when the power in the PV array is sufficient, and the duration of the overload is related to the overload power.

1) AS 4777.2: 15.0kVA; 2) AS 4777.2: 21.7A



Three-phase hybrid inverter SOLINTEG 25-40 kW



WARRANTY

5-year warranty as standard



200% POWER FOR 60S

Prevention of inverter overload when starting devices



LOW START VOLTAGE

Voltage excitation at 135V



HIGH EFFICIENCY

98.8% charge and discharge efficiency



UNBALANCE PHASE

Supporting an uneven load of 100%



PARALLEL WORK

Possibility of parallel operation of 10 devices



„BREATHING” LIGHT

Simply displays the current status of the device



Current 100 A

Electrical parameters		MHT-25K-100	MHT-30K-100	MHT-36K-100	MHT-40K-100
Max. power	kW	37.5	45.0	54.0	60.0
Start voltage	V	135			
Max. input voltage DC	V	1000			
Nominal input voltage**	V	620			
Range voltage MPPT***	V	200 - 950			
Number MPPT	-	4			
Number of MPPT inputs	pcs.	2			
Max. input current	A	30 x 4			
Max. short-circuit current	A	40 x 4			
Battery		MHT-25K-100	MHT-30K-100	MHT-36K-100	MHT-40K-100
Battery voltage range	V	135 - 750			
Max. charge / discharge current	A	100 / 100			
Battery type	-	Lithium (BMS)			
Grid		MHT-25K-100	MHT-30K-100	MHT-36K-100	MHT-40K-100
Nominal output power	kW	25.0	30.0	36.0	40.0
Max. apparent output power	kVA	27.5	33.0 / 30.0 ¹⁾	39.6	44.0
Max apparent input power****	kVA	30.0	36.0	43.5	48.0
Max. battery charging power	kW	25.0	30.0	36.0	40.0
Nominal voltage	V	3L / N / PE; 220 / 380; 230 / 400; 240 / 415			
Nominal frequency	Hz	50 / 60			
Max. input current	A	42.0	50.0 / 43.5 ²⁾	60.0	66.0
Power factor	%	1 (-0.8 / +0.8)			
THD	%	< 3			
DCI	%	< 0.5			
Back-up power		MHT-25K-100	MHT-30K-100	MHT-36K-100	MHT-40K-100
Nominal output power	kW	25.0	30.0	36.0	40.0
Max. apparent power output	kVA	27.5	33.0	39.6	44.0
Max. output current	A	42.0	50.0	60.0	66.0
Switching time	ms	< 20			
Nominal output voltage	V	3 / N / PE; 220 / 380; 230 / 400; 240 / 415			
Nominal output frequency	Hz	50 / 60			
Peak output power*****	kVA / s	30.0	36.0	43.5	48.0
THD	%	< 3			
Efficiency		MHT-25K-100	MHT-30K-100	MHT-36K-100	MHT-40K-100
Max. efficiency	%	98.8			
Efficiency EURO	%	98.3			
Protection		MHT-25K-100	MHT-30K-100	MHT-36K-100	MHT-40K-100
DC reverse polarity protection	-	Yes			
Battery input reverse connection protection	-	Yes			
Insulation resistance protection	-	Yes			
Surge protection	-	Yes			
Over-temperature protection	-	Yes			
Residual current protection	-	Yes			
Islanding protection	-	Yes			
AC over-voltage protection	-	Yes			
Overload protection	-	Yes			
AC short-circuit protection	-	Yes			
Over voltage category	-	PV II ; AC III			
General parameters		MHT-25K-100	MHT-30K-100	MHT-36K-100	MHT-40K-100
Dimensions (width x height x depth)	mm	760 x 490 x 290			
Weight	kg	56			
Warranty	-	5 years			
Protection rating	-	IP65			
Standby Self-consumption	W	< 15			
Topology	-	Transformerless			
Operating temperature range	°C	-30 ~ +60			
Humidity	%	0 ~ 100			
Altitude	m	3000 (power derating > 3000m)			
Cooling	-	Smart fan			
Noise level	dB	< 50			
Display	-	OLED & LED			
Communication	-	CAN, RS485, WiFi / LAN (Optional)			
Reliability & Certification					
IEC/EN 62109, IEC/EN 61000, EN50549-1, TOR generator type A, VDE-AR-N-4105					

* The above parameters are indicative and subject to change. Detailed information at the address - www.soluna.com.pl.

** Max. operating DC voltage is 950V, max. withstanding DC voltage is 1000V.

***The maximum MPPT voltage and operating voltage upper limit will be reduced to 900 V when inverter connects and works with battery.

**** Max apparent power from the grid means the maximum power imported from the utility grid used to satisfy the backup loads and charge the battery.

***** The output power will exceed the rated value only when the power in the PV array is sufficient, and the duration of the overload is related to the overload power.

1) AS 4777.2, VDE-AR-N 4105: 30.0kW 2) AS 4777.2, VDE-AR-N 4105: 30.0kVA

HYBRID INVERTER

AFORE

3-20kW





Single-phase hybrid inverter ATON 3-6 kW



WARRANTY

15-year warranty as standard



OVERSIZE

Ability to oversize x 1.5



AFCI

Arc detection (optional)



HIGH EFFICIENCY

97.6% charge and discharge efficiency



PROTECTION RATING IP65

High resistance to weather conditions



UPS FUNCTION

Transfer time < 10 ms



PARALLEL WORK

Possibility of parallel operation of 6 devices



MODERN DESIGN

New functional unibody

Electrical parameters		AF3K-SL-1	AF3.6-SL-1	AF3K-SL	AF3.6K-SL	AF4K-SL	AF5K-SL	AF6K-SL	
Max. power	W	4500	5400	4500	5400	6000	7500	9000	
Max. voltage	V	550							
MPPT voltage range	V	80 - 500							
Nominal voltage	V	360							
Start voltage	V	100							
Max. current	A	18.5 x 1			18.5 x 2				
Max. short-circuit current	A	26 x 1			26 x 2				
Number of MPPT / Number of strings	pcs.	1 / 1			2 / 2				
Back-up power		AF3K-SL-1	AF3.6-SL-1	AF3K-SL	AF3.6K-SL	AF4K-SL	AF5K-SL	AF6K-SL	
Max. continuous current	A	14	17	14	17	19	23	28	
Max. continuous power	kVA	3.0	3.6	3.0	3.6	4.0	5.0	6.0	
Max. peak current (10min)	A	20.5 / 19.6	24.6 / 23.5	20.5 / 19.6	24.6 / 23.5	27.3 / 26.1	34.1 / 32.7	41.0 / 39.2	
Max. peak power (10min)	kVA	4.5	5.4	4.5	5.4	6.0	7.5	9.0	
Nominal current AC	A	13.7 / 13.1	16.4 / 15.7	13.7 / 13.1	16.4 / 15.7	18.2 / 17.4	22.8 / 21.8	27.3 / 26.1	
Nominal voltage AC L-N	V	220 / 230							
Nominal frequency	Hz	50 / 60							
Switching time	s	Liquid							
THD	%	< 3							
Grid AC		AF3K-SL-1	AF3.6-SL-1	AF3K-SL	AF3.6K-SL	AF4K-SL	AF5K-SL	AF6K-SL	
Max. continuous current	A	14	17	14	17	19	23	28	
Max. continuous power	kVA	3.0	3.6	3.0	3.6	4.0	5.0	6.0	
Nominal current AC	A	13.7 / 13.1	16.4 / 15.7	13.7 / 13.1	16.4 / 15.7	18.2 / 17.4	22.8 / 21.8	27.3 / 26.1	
Nominal voltage AC	V	207 - 253							
Nominal frequency	Hz	50 / 60							
Power factory	-	0.999 (-0.8 / +0.8)							
THD	%	< 3							
Battery		AF3K-SL-1	AF3.6-SL-1	AF3K-SL	AF3.6K-SL	AF4K-SL	AF5K-SL	AF6K-SL	
Max. charge / discharge power	W	3000	3600	3000	3600	4000	4800		
Max. charge / discharge current	A	80							
Nominal voltage battery	V	51.2							
Nominal battery range	V	40 - 60							
Battery type	-	Lead Acid / Lithium Ion							
Efficiency		AF3K-SL-1	AF3.6-SL-1	AF3K-SL	AF3.6K-SL	AF4K-SL	AF5K-SL	AF6K-SL	
Efficiency CEC	%					97.00			
Efficiency MAKS	%					97.60			
Battery efficiency - PV	%					98.10			
Battery efficiency - AC	%					96.80			
Protection		AF3K-SL-1	AF3.6-SL-1	AF3K-SL	AF3.6K-SL	AF4K-SL	AF5K-SL	AF6K-SL	
Reverse polarity protection	-					Yes			
Over current / voltage protection	-					Yes			
Anti-islanding protection	-					Yes			
AC short-circuit protection	-					Yes			
Leakage current detection	-					Yes			
Ground fault monitoring	-					Yes			
Insulation resister detection	-					Yes			
PV arc detection	-					Optional			
General parameters		AF3K-SL-1	AF3.6-SL-1	AF3K-SL	AF3.6K-SL	AF4K-SL	AF5K-SL	AF6K-SL	
Dimensions (width x height x depth)	mm	370 x 513 x 192							
Weight	kg	17							
Warranty	-	15 years							
Protection rating	-	IP65 / NEMA4X							
Topology	-	Transformerless							
Operating temperature range	°C	-25 ~ +60							
Humidity	%	0 - 100							
Communication	-	LCD, LED, RS485, Wi-Fi, CAN, GPRS, 4G, SUNSPEC							
Cooling	-	Smart fan							
Noise level	dB	< 25							
Standby Self-consumption	W	< 10							
Altitude	m	< 4000							
Reliability & Certification									
NRS97, G98/G99, EN50549-1, C10/C11, AS 4777, VDE-AR-N4105, VDE0126, IEC62040, IEC62109-1, IEC62109-2, EN61000-6-2, EN61000-6-3									

* The above parameters are indicative and subject to change. Detailed information at the address - www.soluna.com.pl



Three-phase hybrid inverter ATON 3-10 kW



WARRANTY

15-year warranty as standard



OVERSIZE

Ability to oversize x 1.5



HIGH EFFICIENCY

98% charge and discharge efficiency



PROTECTION RATING IP65

High resistance to weather conditions



UPS FUNCTION

Transfer time < 10 ms



UNBALANCE PHASE

Supporting an uneven relationship

Electrical parameters		AF3K-THP	AF4K-THP	AF5K-THP	AF6K-THP	AF8K-THP	AF10K-THP	
Max. power DC	kW	5	6	7.5	9	12	15	
Max. voltage PV	V	1000						
Nominal voltage DC	V	620						
Range voltage DC	V	150-1000						
MPPT range voltage	V	150-850						
MPPT voltage range at full power	V	200-850		250 - 850		300 - 850	500 - 850	
Start voltage	V	160						
Max current MPPT DC	A	20 x 2						
Max. short-circuit current	A	30 x 2						
Number of MPPT / Number of PV strings	-	2 / 2						
Battery		AF3K-THP	AF4K-THP	AF5K-THP	AF6K-THP	AF8K-THP	AF10K-THP	
Nominal battery voltage	V	100		150		200	250	
Battery range voltage	V	80 - 600						
Max. current charge / discharge	A	50						
Max power charge / discharge	kW	3	4	5	6	8	10	
Charging curve	-	3 steps						
Compatible battery types	-	Lead Acid / Lithium						
Output parameters AC		AF3K-THP	AF4K-THP	AF5K-THP	AF6K-THP	AF8K-THP	AF10K-THP	
Nominal output power AC	VA	3000	4000	5000	6000	8000	10000	
Max. input power AC	VA	4500	6000	7500	9000	12000	15000	
Max. output current AC	A	5.3	7	8.5	10.5	13.5	17	
Nominal voltage	V	230 / 400						
Nominal frequency	Hz	50 / 60						
Power factory	-	1 (-0.8 - 0.8)						
THD	%	< 3						
Backup power (EPS mode)		AF3K-THP	AF4K-THP	AF5K-THP	AF6K-THP	AF8K-THP	AF10K-THP	
Nominal output power	VA	3000	4000	5000	6000	8000	10000	
Nominal output voltage	V	230 / 400						
Nominal output frequency	Hz	50 / 60						
Nominal output current	A	4.4	5.8	7.3	8.7	11.6	14.5	
Peak power output	VA / s	3300 / 60	4400 / 60	5500 / 60	6600 / 60	8800 / 60	11000 / 60	
THD	%	< 3						
Switching time	ms	< 10						
Efficiency		AF3K-THP	AF4K-THP	AF5K-THP	AF6K-THP	AF8K-THP	AF10K-THP	
Efficiency EURO	%	97.50						
Efficiency MAKES	%	98.00			98.20			
Efficiency charge / discharge	%	98.00						
Protection		AF3K-THP	AF4K-THP	AF5K-THP	AF6K-THP	AF8K-THP	AF10K-THP	
Reverse polarity protection	-	Yes						
Over current / voltage protection	-	Yes						
Anti-islanding protection	-	Yes						
AC short-circuit protection	-	Yes						
Leakage current detection	-	Yes						
Ground fault monitoring	-	Yes						
Insulation resistor detection	-	Yes						
Protection rating	-	IP65						
General parameters		AF3K-THP	AF4K-THP	AF5K-THP	AF6K-THP	AF8K-THP	AF10K-THP	
Dimensions (width x height x depth)	mm	558 x 535 x 260						
Weight	kg	29						
Topology	-	Transformerless						
Cooling	-	Intelligent						
Humidity	%	0 - 100						
Operating temperature range	°C	-25 ~ 60						
Altitude	m	< 4000						
Noise level	dB	< 30						
Standby self-consumption	W	< 5						
Communication	-	LCD, LED, RS485, Wi-Fi, CAN, GPRS, 4G						
Reliability & Certification								
NRS97, G98/G99, EN50549-1, C10/C11, AS 4777, VDE-AR-N4105, VDE0126, IEC62040, IEC62109-1, IEC62109-2, EN61000-6-2, EN61000-6-3								

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Three-phase hybrid inverter ATON 12-30 kW



WARRANTY

15-year warranty as standard



OVERSIZE

Ability to oversize x 1.5



HIGH EFFICIENCY

98% charge and discharge efficiency



PROTECTION RATING IP65

High resistance to weather conditions



UPS FUNCTION

Transfer time < 10 ms



UNBALANCE PHASE

Supporting an uneven relationship

Electrical parameters		AF12K-THP	AF15K-TH	AF17K-TH	AF20K-TH	AF25K-TH	AF30K-TH
Max. power DC	kW	18	22.5	25.5	30	37.5	45
Max. voltage PV	V	1000					
Nominal voltage DC	V	620					
Range voltage DC	V	150 - 1000					
MPPT range voltage	V	150 - 850					
MPPT voltage range at full power	V	500 - 850					
Start voltage	V	160					
Max current MPPT DC	A	20 x 2	20 + 32	32 x 2		40 x 2	
Max. short-circuit current	A	30 x 2	30 + 48	48 x 2		60 x 2	
Number of MPPT / Number of PV strings	-	2 / 2	2 / 3	2 / 4			
Battery		AF12K-THP	AF15K-TH	AF17K-TH	AF20K-TH	AF25K-TH	AF30K-TH
Nominal battery voltage	V	300	500	400	500		550
Battery range voltage	V	120 - 650		150 - 800			
Max. current charge / discharge	A	50				60	
Max power charge / discharge	kW	12	15	17	20	25	30
Charging curve	-	3 Stopnie					
Compatible battery types	-	Kwasowo-ołowiowa / Litowa					
Output parameters AC		AF12K-THP	AF15K-TH	AF17K-TH	AF20K-TH	AF25K-TH	AF30K-TH
Nominal output power AC	VA	12000	15000	17000	20000	25000	30000
Max. input power AC	VA	18000	22500	25500	30000	37500	45000
Max. output current AC	A	21.5	27	30	32	40	48
Nominal voltage	V	230 / 400					
Nominal frequency	Hz	50 / 60					
Power factory	-	1 (-0.8 - 0.8)					
THD	%	< 3					
Backup power (EPS mode)		AF12K-THP	AF15K-TH	AF17K-TH	AF20K-TH	AF25K-TH	AF30K-TH
Nominal output power	VA	12000	15000	17000	20000	25000	30000
Nominal output voltage	V	230 / 400					
Nominal output frequency	Hz	50 / 60					
Nominal output current	A	17.4	21.8	24.7	29	36.3	43.5
Peak power output	VA / s	13200 / 60	16500 / 60	18700 / 60	22000 / 60	27500 / 60	33000 / 60
THD	%	< 3					
Switching time	ms	< 10					
Efficiency		AF12K-THP	AF15K-TH	AF17K-TH	AF20K-TH	AF25K-TH	AF30K-TH
Efficiency EURO	%	97.50		97.80		98.00	98.10
Efficiency MAKES	%	98.30				98.50	
Efficiency charge / discharge	%	98.00					
Protection		AF12K-THP	AF15K-TH	AF17K-TH	AF20K-TH	AF25K-TH	AF30K-TH
Reverse polarity protection	-					Yes	
Over current / voltage protection	-					Yes	
Anti-islanding protection	-					Yes	
AC short-circuit protection	-					Yes	
Leakage current detection	-					Yes	
Ground fault monitoring	-					Yes	
Insulation resistor detection	-					Yes	
Protection rating	-	IP65					
General parameters		AF12K-THP	AF15K-TH	AF17K-TH	AF20K-TH	AF25K-TH	AF30K-TH
Dimensions (width x height x depth)	mm	558 x 535 x 260		588 x 426 x 250			
Weight	kg	29		28		35	
Topology	-	Transformerless					
Cooling	-	Intelligent					
Humidity	%	0 - 100					
Operating temperature range	°C	-25 ~ 60					
Altitude	m	< 4000					
Noise level	dB	< 30					
Standby self-consumption	W	< 5					
Communication	-	LCD, LED, RS485, Wi-Fi, CAN, GPRS, 4G					
Reliability & Certification							
NRS97, G98/G99, EN50549-1, C10/C11, AS 4777, VDE-AR-N4105, VDE0126, IEC62040, IEC62109-1, IEC62109-2, EN61000-6-2, EN61000-6-3							

* The above parameters are indicative and subject to change. Detailed information at the address - www.soluna.com.pl

OPERATING MODES 0

AFORE INVERTERS

Afore hybrid inverters have several operating modes that maximize the current yields depending on the settings, quality of current production and energy access. In the event of a power outage, the inverter, thanks to variable operating modes, will allow for continuity of production and will not expose the user to its interruption. Optimizing the operation of the inverter is a milestone towards the goal of the most efficient use of available energy.

SELF-USE MODE (Basic Mode, diagram 1.1)

The energy produced by the installation is first transferred to meet current consumption, and then to the battery. Excess energy is returned to the public grid. When the public grid is abnormal, the power transfer will be in grid off mode.

(STABILIZATION OF POWER FROM THE NETWORK, diagram 1.2)

The energy produced by the installation is first used to meet current consumption. Surpluses are returned to the public grid with a constant value around the clock, e.g. 1 kWh. Excess energy is transferred to the battery.

TIME MODE (diagram 2.1)

The energy produced by the installation is first used to meet current consumption. When the photovoltaic installation does not produce enough energy to supply the loads on an ongoing basis, the necessary power will be taken from the grid. This mode has the ability to set the power and time of supplying the current consumption from the battery and the ability to set the power and time of battery charging by the photovoltaic installation, as well as charging the battery from the network.

PRIORITY SALE MODE (diagram 3.1)

The energy produced by the photovoltaic installation is first transferred to meet current consumption, and then it is sold to the grid. This mode allows you to set the maximum output power to the grid, after reaching which the surplus is transferred to the battery.

F HYBRID INVERTERS

Legend

Current load

—
Power currently produced by PV

—
Grid output power limit

Current grid power

▒
Loads powered by PV

▒
Mains-powered loads

■
Battery powered loads

▒
Energy fed into the grid

▒
PV charges the battery

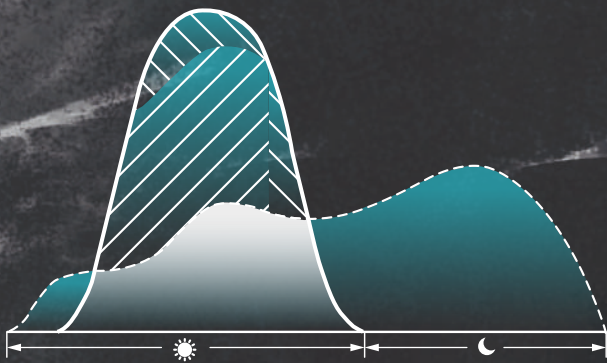


Diagram 1.1

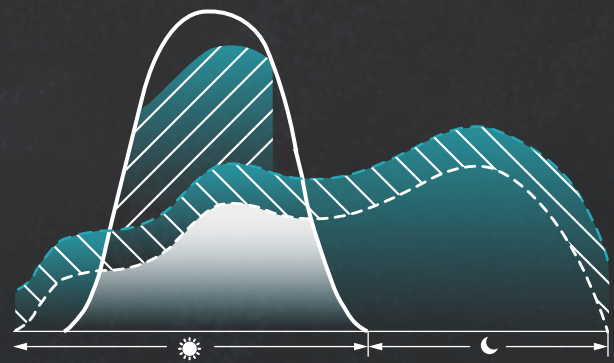


Diagram 1.2

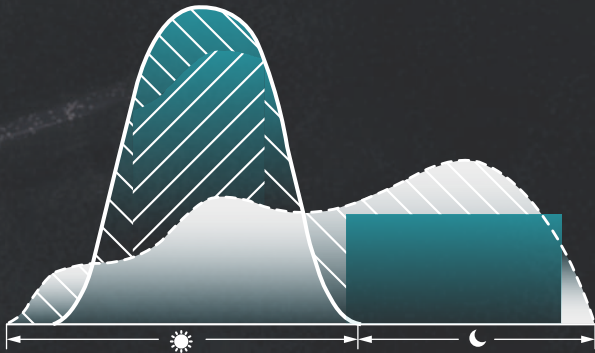


Diagram 2.1

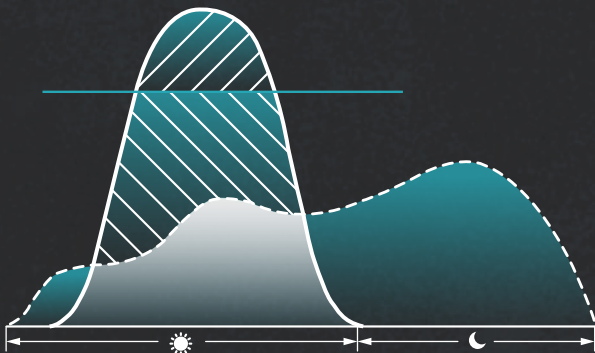


Diagram 3.1

OPERATING MODES 0

AFORE INVERTERS

FULL BATTERY MODE (diagram 4.1)

This mode works well for frequent power outages. The energy produced by the installation first supplies the battery, which is discharged only when the grid is turned off. When the photovoltaic installation does not produce enough energy to meet the current consumption, the power needed will be taken from the public grid.

SAFE CHARGING MODE (diagram 5.1)

If a particular battery requires safe charging, this mode - in case of low voltage or SOC (battery level of charge) - will slowly charge the battery until it reaches a safe value. When the battery reaches a safe level, it will start charging in the standard way.

OFF GRID MODE (diagram 6.1)

This mode will switch to off-grid mode in case of a shutdown or abnormal operation of the public grid. The energy produced by the installation powers the loads first and then the battery. When the photovoltaic installation does not produce enough energy to meet the current consumption, the power needed will be taken from the battery.

F HYBRID INVERTERS

Legend

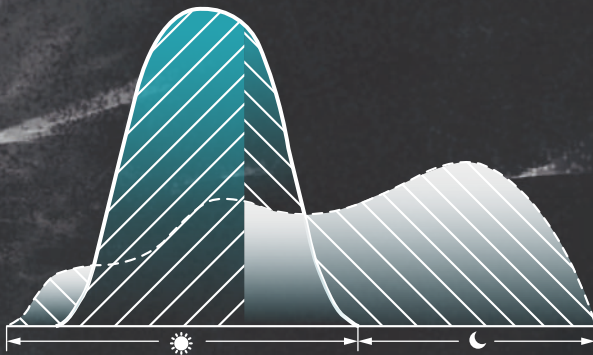
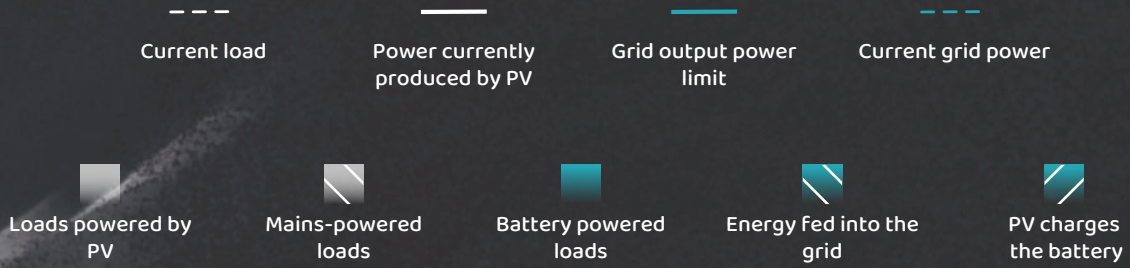


Diagram 4.1

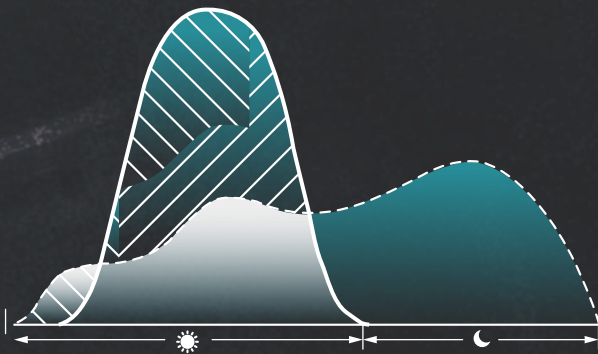


Diagram 5.1

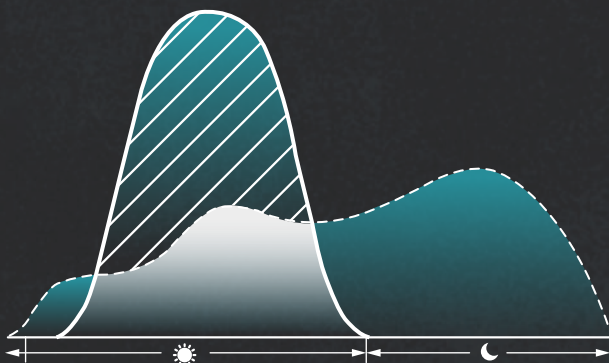


Diagram 6.1

OPERATING MODES 0

SOLINTEG INVERTERS

GENERAL MODE

PRODUCTION > CONSUMPTION (diagram 7.1)

If the photovoltaic installation generates enough power to cover the current load, then the energy goes first to the load, and its surplus to the energy storage or the power grid, respectively.

PRODUCTION < CONSUMPTION (diagram 7.2)

If the currently generated power is not sufficient to cover the current consumption, the deficit is supplemented successively from: energy storage >> power grid.

PEAK LOAD SHIFTING MODE

LOAD ≤ GRID (diagram 8.1)

If the power of the receivers is lower than the power of the set grid, the PV energy first charges the batteries, while the receivers are powered from the grid. When the battery is charged, the energy from the PV installation together with the grid supplies the receivers.

LOAD ≥ GRID (diagram 8.2)

If the power of the receivers is lower than the power of the set grid, the PV energy first charges the batteries, while the receivers are powered from the grid. When the battery is charged, the energy from the PV installation together with the grid supplies the receivers.

ECONOMY MODE

BATTERY CHARGING MODE (diagram 9.1)

This mode allows you to optimize electricity costs for tariffs available in your country. Allows timed charging of the battery from the grid or PV.

BATTERY DISCHARGE MODE (diagram 9.2)

At certain times, e.g. at the time of high electricity price tariff, energy from the energy storage will power the loads of devices or may be resold to the grid.

F HYBRID INVERTERS

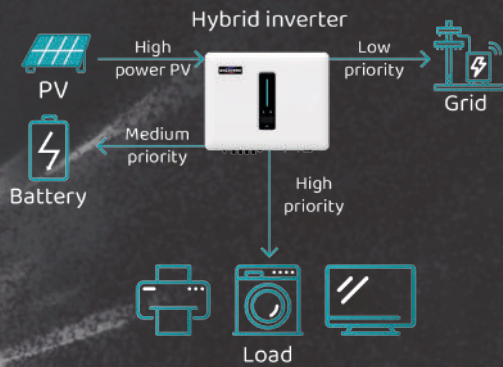


Diagram 7.1

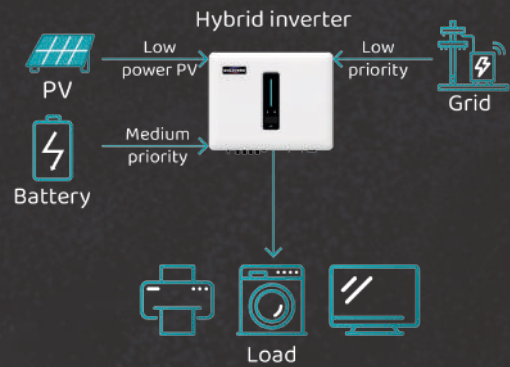


Diagram 7.2

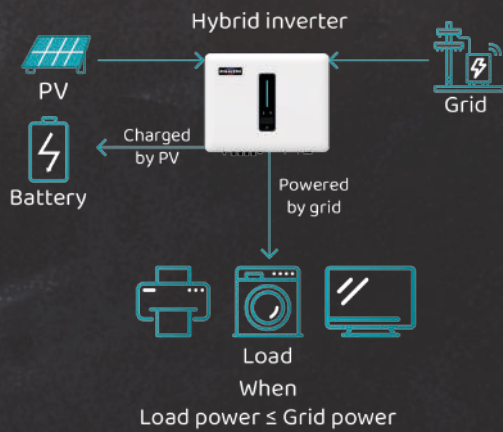


Diagram 8.1

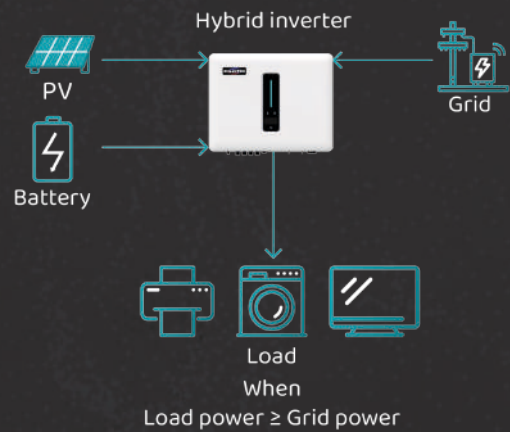


Diagram 8.2

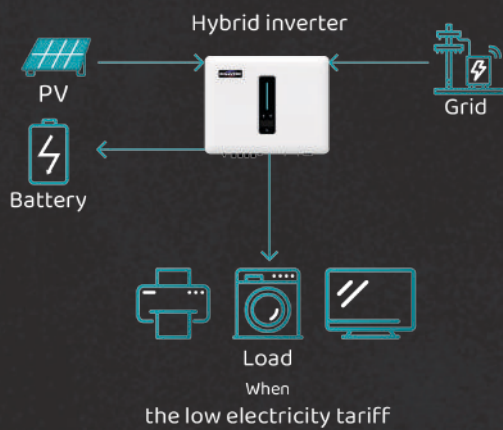


Diagram 9.1

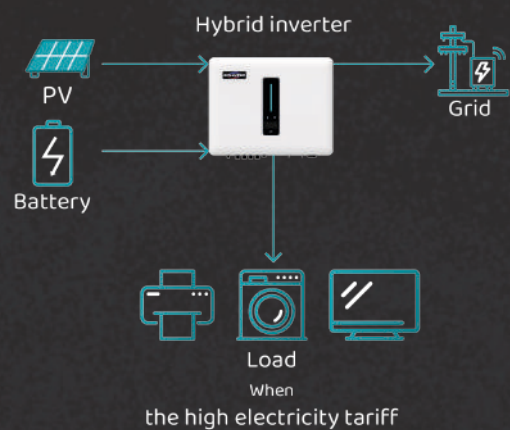


Diagram 9.2

OPERATING MODES 0

SOLINTEG INVERTERS

UPS MODE

GRID MODE (diagram 10.1)

In this mode, the battery has priority, the PV energy charges the batteries first. The receivers are powered from the mains. The battery will not discharge as long as the network is connected.

OFF-GRID MODE (diagram 10.2)

If the grid fails and the PV power is insufficient to cover the load demand, the storage powers the loads connected to the Back-up output.

OFF-GRID MODE

PRODUCTION > LOAD (diagram 11.1)

In the case of a sufficient amount of energy from PV, the receivers are supplied first, the surplus energy is stored in the battery.

PRODUCTION < LOAD (diagram 11.2)

When the power from the PV is not sufficient, the battery together with the PV powers the receivers connected to it back-up outputs.

F HYBRID INVERTERS

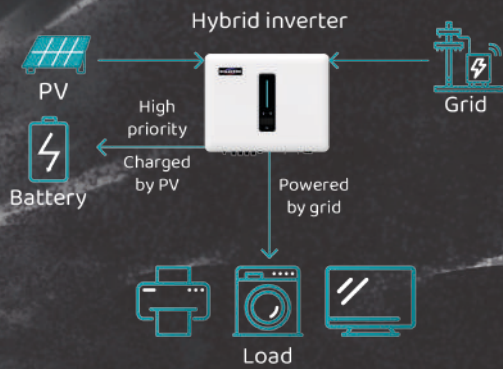


Diagram 10.1

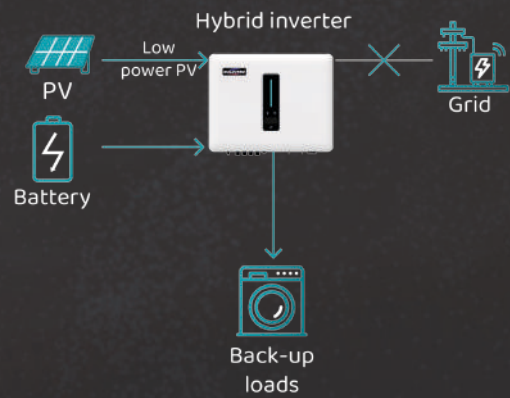


Diagram 10.2

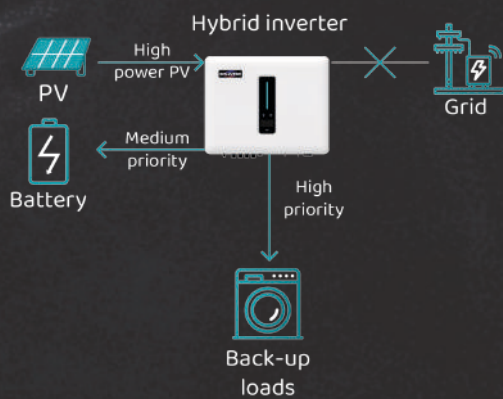


Diagram 11.1

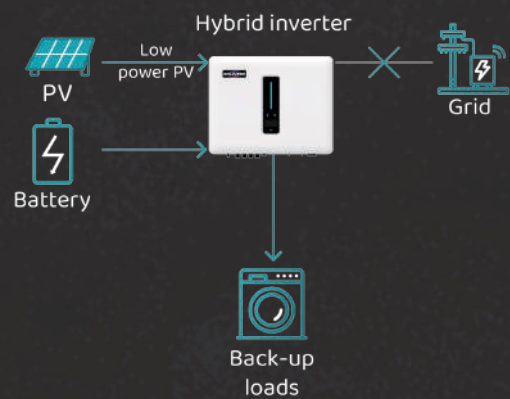


Diagram 11.2

Possibility of connecting the battery to the existing ON-GRID installation

AC COUPLE





AC Couple 3-4 kW



SMOOTH SWITCH

Between the EPS and the grid



MAXIMUM 80 A

Charge and discharge current



HIGH EFFICIENCY

97.6% charge and discharge efficiency



INTELLIGENT SOFTWARE

Remote software update



PROTECTION RATING IP65

High resistance to weather conditions



MODERN DESIGN

New functional unibody

What is AC Couple?

AC COUPLE is a device that looks like an inverter. It is an alternative solution for owners of grid inverters who have decided - additionally - to store surplus energy, and do not want to incur the costs of replacing the inverter with a hybrid one. The use of AC COUPLE in tandem with a grid inverter will allow you to enjoy the advantages of a hybrid installation, without having to invest in a hybrid inverter and - de facto - leaving the previously used on-grid inverter useless.

Battery		AF3K-SL-0	AF4.6K-SL-0
Max. charge / discharge power	W	3000	4000
Max. charge / discharge current	A		80
Nominal voltage	V		51.2
Voltage range	V		40 - 60
Battery type	-	Lithium - Ion / Lead - Acid	
Grid AC		AF3K-SL-0	AF4.6K-SL-0
Max. continuous current	A	14	19
Max. continuous power	kVA	3.0	4.0
Nominal current	A	13.7 / 13.1	18.2 / 17.4
Nominal voltage	V	198 to 242 @ 220 / 207 to 253 @ 230	
Nominal frequency	Hz	50 / 60	
Power factor	-	0.999 (Adjustable -0.8 / +0.8) (inductive / capacitive)	
THD	%	< 3	
Back-up power		AF3K-SL-0	AF4.6K-SL-0
Max. continuous current	A	14	19
Max. continuous power	kVA	3.0	4.0
Max. peak current (10min)	A	20.5 / 19.6	27.3 / 26.1
Max. peak power (10min)	kVA	4.5	6.0
Nominal current AC	A	13.7 / 13.1	18.2 / 17.4
Nominal voltage AC L-N	V	220 / 230	
Nominal frequency	Hz	50 / 60	
Switching time	s	Liquid	
THD	%	< 3	
Efficiency		AF3K-SL-0	AF4.6K-SL-0
Efficiency MAKS	%		97.60
Efficiency between BATTERY / AC	%		96.80
Protection		AF3K-SL-0	AF4.6K-SL-0
Over current / voltage protection	-		Yes
Anti-islanding protection	-		Yes
AC Short circuit protection	-		Yes
Residual current detection	-		Yes
Insulation resistor detection	-		Yes
Enclosure protect level	-		Yes
General parameters		AF3K-SL-0	AF4.6K-SL-0
Dimensions (width x height x depth)	mm	370 x 510 x 197	
Weight	kg	16.5	
Protection rating	-	IP65 / NEMA4X	
Case	-	Aluminum	
Operating temperature range	°C	-25 ~ +60	
Humidity	%	0 - 100	
Topology	-	Transformer insulation	
Communication	-	LCD, LED, RS485, CAN, WiFi, GPRS, 4G, SUNSPEC	
Cooling	-	Smart fan	
Noise level	dB	< 25	
Standby Self-consumption	W	< 10	
Altitude	m	4000	
Reliability & Certification			
CE, NRS97, G98/G99, EN50549-1, C10/C11, AS 4777, VDE-AR-N4105, VDE0126, IEC62040, IEC62109-1/2, IEC61000-6-2/3			

* The above parameters are indicative and subject to change. Detailed information at the address - www.soluna.com.pl

CONNECTION DIAGRAMS

Diagram with a single-phase hybrid inverter

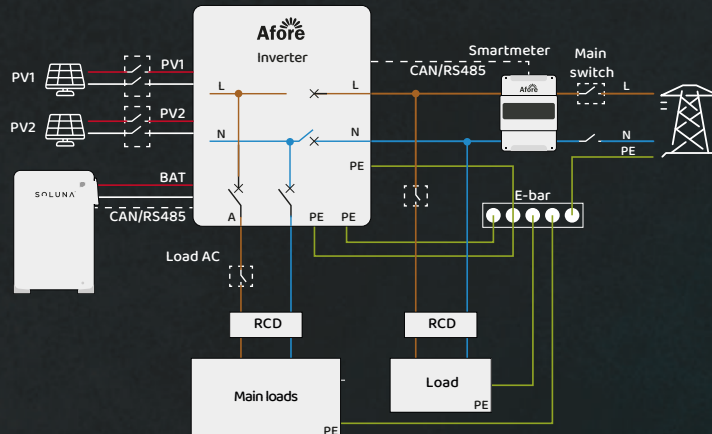


Diagram with a three-phase hybrid inverter

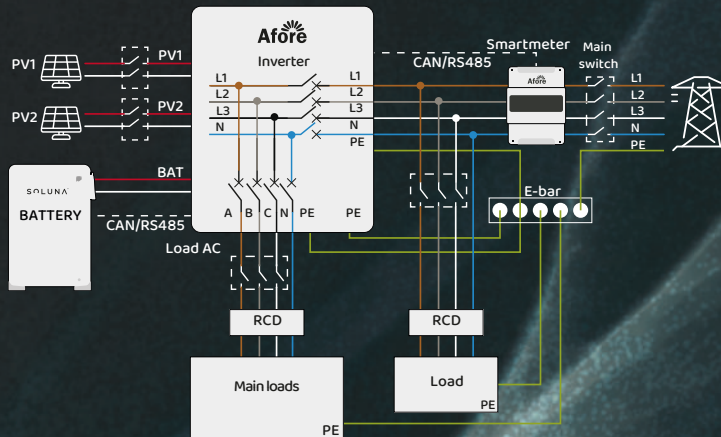
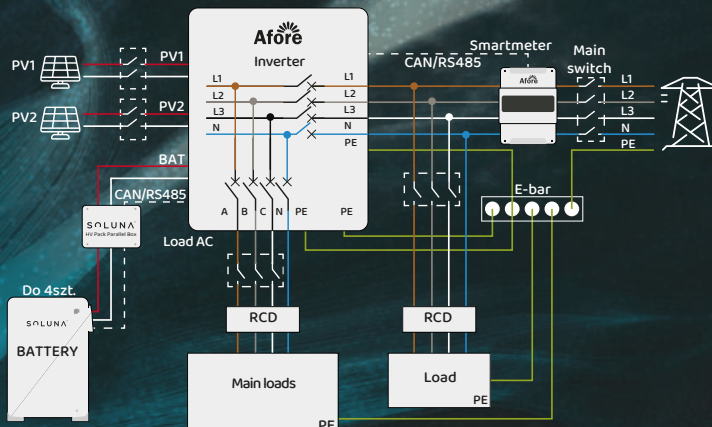


Diagram with a three-phase hybrid inverter when using parallel
Analogous diagram with single-phase connection







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www.bankienergii.pl

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