



The Autarsys Mini is a modular Energy Storage System (ESS) and serves different applications. As a turnkey solution, it is possible to integrate the Autarsys Mini into both an Off-Grid and On-Grid application. Independent of the grid, the consumer gets Uninterrupted Power Supply (UPS) with stable voltage and frequency. Combined with conventional (e.g. Diesel) or renewable (e.g. PV, Wind, Biogas) energy sources the system offers a project specific energy management function. Connected to a Single Wire Earth Return (SWER) – Grid, it is possible to use the Autarsys Mini under optimal conditions as Online-UPS and offer a real three phase grid to the consumer with all advantages.

The system has a rated power of 30 to 90 kW and an energy storage capacity between 33 and 274 kWh, depending on the cell type and the application of the ESS. It is housed in an 8 Ft storage container which is protected and isolated to harsh environment. The military grade air conditioning system allows operation under ambient temperatures up to 55 °C. Because of the optimal working condition for the electronics the supplier of battery and inverter offer an extended warranty of up to ten years<sup>1</sup>.

Control	Energy management	Monitoring	Service
<ul style="list-style-type: none"> <li>• Frequency control (P(f))</li> <li>• Voltage control (Q(U))</li> <li>• Harmonic compensation</li> </ul>	<ul style="list-style-type: none"> <li>• Renewable (e.g. Sun, Wind), conventional (e.g. Diesel) energy sources</li> <li>• Optimal use of energy sources</li> <li>• Direct communication between renewable/conventional sources and the ESS</li> </ul>	<ul style="list-style-type: none"> <li>• Actual/historical operating data</li> <li>• Logging of power data related to the guarantee</li> <li>• Control and monitoring via HMI, local and per remote access</li> </ul>	<ul style="list-style-type: none"> <li>• User administration and logging of user interactions</li> <li>• Alarms (fault, sabotage, fire) with different escalation levels</li> <li>• Logging of all events and data</li> </ul>

<sup>1</sup> The warranty is related to an optional service agreement between Autarsys and the end customer.

Standard Configurations*	Energy Cell ( $\leq 0.5C$   $0.5-1C$ )				Power Cell (2.5C)			
	Capacity [kWh]				Capacity [kWh]			
	45-68.5	91 - 137	137 - 205	182 - 274	33 - 49	66 - 98	98 - 147	131 - 197
30 kW	√	√	√	√	√	(√)	(√)	(√)
60 kW	√	√	√	√	√	√	(√)	(√)
90 kW	-	√	√	√	√	√	√	√

- not possible, (√) optional, √ possible. Project specific modifications are possible

	Mini-ESS 30	Mini-ESS 60	Mini-ESS 90
<b>System Parameters</b>			
Rated Power [kVA]	30	60	90
AC Voltage [V]		400 (max. 415) ± 10%	
Nominal current [A]	43.5	87	130.5
Frequency [Hz]	50/60	50/60	50/60
THD <sub>U</sub> [%]	<2	<2	<2
Operating temperature <sup>1</sup> [°C]	-10/+55	-10/+55	-10/+55
Inverter efficiency [%]	>96	>96	>96
Overall efficiency (round trip) [%]	>85	>85	>85
Dimensions (LxWxH) [m]	2.44 x 2.20 x 2.26	2.44 x 2.20 x 2.26	2.44 x 2.20 x 2.26
Maximum weight [t]	1.8	2.5	3.2

<b>Storage Battery</b>			
Cell Chemistry	Li-ion NCM	Li-ion NCM	Li-ion NCM
Cell manufacturer	Samsung SDI	Samsung SDI	Samsung SDI
Specified cycles (Energy / Power) <sup>2</sup>	4000 / 6000	4000 / 6000	4000 / 6000
Calendar life [years] <sup>2,3</sup>	20	20	20
Operating temperature [°C]	23 ± 5	23 ± 5	23 ± 5
Efficiency @ 0.5C / 1.0 C / 2.5C [%]	>96 / >95 / >93	>96 / >95 / >93	>96 / >95 / >93

<b>Applications*</b>	Standard	Optional
Off-Grid	√	
On-Grid	√	
Black start capability		√
Islanding		√
Fuel save		√
Energy Management	√	
Renewable Control Mode <sup>4</sup>		√
Arbitrage / Load shifting		√
Frequency regulation P(f)		√
Voltage stabilization Q(U)		√
Harmonic compensation up to 51 <sup>st</sup>	√	
Reactive power compensation		√
UPS-functionality		√
SWER-net integration		√

<b>Interface</b>			
Touch display	√	√	√
Data monitoring (SCADA)	√	√	√
Ethernet (LWL optional)	√	√	√
Modbus	√	√	√
GMS (GPRS)/ Satellite communication	√	√	√

**Standard (additional available on request)**

EN 61000-6-2, EN 61000-6-4, IEC 62040, CE-Conformity

**Installation Requirements**

Max. altitude above MSL [m]	1000	1000	1000
Noise emission (1m distance) [dB]	<60	<60	<60

Details:

- <sup>1</sup> Project specific modifications are possible
- <sup>2</sup> Depends on the application
- <sup>3</sup> Full cycle per day
- <sup>4</sup> Peak shaving, Smoothing, Ramp-rate control
- \*The standard solution and configuration may vary depending upon the application required