

Toyomax ESS PRO Series (5000W / 5.12kWh – 15.36kWh)

Product Title: Toyomax ESS PRO Series Stackable Home Energy Storage System



Subtitle: All-in-One 3-in-1 Solar, Grid & Lithium Battery System with Modular Stacking Capability

Overview

The Toyomax ESS PRO Series is a stackable, all-in-one residential and commercial energy storage solution designed for high performance, ease of installation, and reliable power backup. Integrating solar PV inputs, utility grid/generator management, and lithium battery storage into a unified system, the ESS PRO Series eliminates complex external wiring while delivering a robust 5000W AC output. Engineered to start heavy inductive loads—including

up to 3-HP to 4-HP air conditioners—it features an IP66 outdoor protection rating and real-time Wi-Fi cloud monitoring for continuous operational control.

Key Features & Highlights

- **3-in-1 All-In-One Integration:** Seamlessly unifies Solar PV, Grid/Generator inputs, and LiFePO4 Lithium battery management into a single enclosure, reducing installation time and wiring work.
- **Modular Stackable Battery Design:** Expandable storage capacity supporting 1 to 3 stacked battery modules (5120Wh per pack), scaling from 5.12kWh up to 15.36kWh.
- **Heavy Load Capacity:** High surge power capability (up to 12,000VA peak power) designed to start demanding household appliances and up to 4HP motor/AC loads.
- **Dual MPPT Solar Inputs:** Dual independent MPPT trackers supporting up to 9000W (4500W + 4500W) of total solar PV input.
- **IP66 Outdoor Enclosure:** Dust-tight and water-resistant rating designed for outdoor and indoor mounting environments.
- **Multi-Source Power Management:** Direct connection ports for PV arrays, utility grid networks, and automated backup generators.
- **Smart Monitoring & Control:** Built-in Wi-Fi interface and cloud platform for real-time remote monitoring via smartphone app or desktop dashboard.
- **Multi-Unit Parallel Expansion:** Supports parallel connection of 1 to 6 system units for expanded energy output.

System Interface & Port Layout

The system base includes an accessible interface panel featuring:

1. **PV Switch** – Integrated rotary DC isolator.
2. **PV 1 Input** – Primary solar string terminal.
3. **PV 2 Input** – Secondary solar string terminal.
4. **Parallel Connection Terminal** – Interface for multi-unit system scaling.
5. **Dry Contact Control** – Automated generator auto-start signaling port.
6. **Wi-Fi Dongle Interface** – Remote telemetry and cloud connection port.
7. **Generator Input Port** – Terminal for auxiliary generator power supply.
8. **Load Port** – Dedicated AC backup output interface for household loads.
9. **Grid Interface** – Main AC utility grid connection terminal.

Technical Specifications

System Parameter	ESS PRO 5050	ESS PRO 50100	ESS PRO 50150
Nominal AC Power Output	5000W	5000W	5000W
Max. Peak Apparent Power	12000VA	12000VA	12000VA
Battery Type	LiFePO4	LiFePO4	LiFePO4
Battery Nominal Voltage	51.2 Vdc	51.2 Vdc	51.2 Vdc
Total Battery Capacity	5120 Wh (5.12 kWh)	10240 Wh (10.24 kWh)	15360 Wh (15.36 kWh)

Number of Battery Packs	1 Module	2 Modules	3 Modules
Max. PV Input Power	9000W (4500W + 4500W)	9000W (4500W + 4500W)	9000W (4500W + 4500W)
Number of MPPTs	2	2	2
MPPT Voltage Range	120 – 450 Vdc	120 – 450 Vdc	120 – 450 Vdc
Max. Open-Circuit Voltage	500Vdc + 500Vdc	500Vdc + 500Vdc	500Vdc + 500Vdc
Nominal AC Voltage	230Vac, Single Phase	230Vac, Single Phase	230Vac, Single Phase
Grid Transfer Time	≥ 10 ms	≥ 10 ms	≥ 10 ms
Protection Rating	IP66	IP66	IP66
Cooling Method	Heatsink & Intelligent Air Cooling	Heatsink & Intelligent Air Cooling	Heatsink & Intelligent Air Cooling
Parallel Capability	1 to 6 Units	1 to 6 Units	1 to 6 Units
Communication Protocols	RS485 / CAN / USB / Dry Contact / Wi-Fi	RS485 / CAN / USB / Dry Contact / Wi-Fi	RS485 / CAN / USB / Dry Contact / Wi-Fi
Safety Certifications	IEC62109-1, IEC62109-2, EN50549-1, ROHS	IEC62109-1, IEC62109-2, EN50549-1, ROHS	IEC62109-1, IEC62109-2, EN50549-1, ROHS

Key Applications

Residential homes, home offices, executive residences, retail shops, and small commercial facilities requiring uninterrupted daily power and reduced utility electricity expenses.