

# Pixii Power Shaper



## Flexible grid tied energy storage system

The PowerShaper2 from Pixii is a complete modular energy storage system designed for outdoor installation. It is fully integrated with PixiiBox inverters and batteries and ready to be connected to the grid for applications like solar self-consumption, demand charge reduction, peak shaving, arbitrage, and various ancillary services.

Each cabinet can house up to 50kW (49,5kW) of power conversion and LFP or NMC batteries to match different applications and requirements.

The PowerShaper can provide a variety of energy-saving or grid-supporting services. These functions can be executed autonomously or monitored and controlled by higher-level energy management systems, communicating over different protocols.

The power conversion in the PowerShaper is achieved using the PixiiBox, a bidirectional 3,3kW AC/DC converter module. There is room for up to 15 PixiiBoxes in each cabinet.

The system includes the Pixii Gateway controller, which provides advanced monitoring and control as well as communication and interoperability via the internet, Wi-Fi, or the wireless network.

For applications requiring more power or energy, several PowerShaper cabinets can be operated as a single system. The PowerShaper is typically used in applications from 10kW up to several megawatts.

## Highlights

- Modular and scalable
- Integrated & battery inverter solution
- Wide range of functions
- For applications 10kW to megawatts
- Compact
- Fast response
- Galvanically isolated AC to DC
- 48V battery voltage for ease of service

*20 foot base, Prewired and including AC connection cabinet*



Performance data	
Nominal AC voltage	230/400VAC
Frequency	50Hz
Max AC current (TN)	83A
Nominal DC voltage	48Vdc
Communications protocols DC current	Modbus/RTU, Modbus/TCP, TCP/IP, MQTT, HTTPS and CAN
Audible noise	66.6 dBA <sup>1</sup> 49.6dBA <sup>2</sup>
Cabinet protection class	IP55
Color	RAL7035

Performance data	
Minimum operating temperature	-20° C
Maximum operating temperature	45° C
Dimensions (w x d x h)	706 x 932 x 2 115 mm
Weight (fully equipped) - LFP 100Ah (10x battery & 15x PixiiBox)	680kg (Shoto 3U Battery) 630kg (Polarium 3U Battery)
Weight (fully equipped) - NMC 250Ah (8x battery & 12x PixiiBox)	756 kg (Polarium 4U Battery)
Environmental management	Fan Cooled (Aircon Optional)

1) Maximum noise at 1m distance

2) Typical acoustic noise value at 50% load at 230 C at 1m distance

### Typical max system performance vs SoC.

Battery type	Shoto 100Ah - 16S LFP		Polarium 100Ah - 15S LFP		Polarium 250Ah - 14S NMC	
Max kWh <sup>3</sup>	50kWh		48kWh		100kWh	
Max power <sup>4</sup>						
SoC	Charge	Discharge	Charge	Discharge	Charge	Discharge
90%	49	48	40	40	10	40
70%	49	48	40	40	40	38
50%	49	48	40	40	40	37
30%	49	47	40	40	40	35
10%	49	46	40	40	40	24

3) Nominal values

4) Values are for batteries at room temperature (25° C). If batteries are colder or warmer, this may affect the maximum power due to battery imbalance or temperature derating.

### Functions

Peak shaving	Reduce your demand charges and save costs by shaving the peaks of your power consumption.
Arbitrage	Support loads from the battery when electricity rates are high, and charge the battery when electricity rates are low.
PV self-consumption	Get the most out of your solar investment and reduce your dependency on the grid through smart power management, enabling you to direct excess energy to batteries for later use during peak hours.
Local power boost	Increase maximum available power capacity by adding smart energy storage systems in parallel with the grid. In locations with temporary overloads, energy storage systems can cover the overload and avoid grid upgrades.
Voltage support	Enables grid operators (DSO's/DNO's/DNSP's) to enhance quality of supply on long weak lines significantly. Unique functionality for voltage-based phase balancing active/reactive power compensation.
Balance services/ Flexibility markets	Unlock the value of your battery energy storage system and monetize your system's flexibility by offering available capacity to ancillary services like FFR, FCR, standard ramp FCAS services and more.

### Applicable standards:

Safety	IEC/EN 62109-1, IEC/EN 62109-2, IEC/EN 62040-1, IEC/EN 62477, (Batteries) IEC 62619, IEC 62368, UN38.3
Grid	AS/NZS 4777-2 :2020, VDE-AR-N 4105, VDE-AR-N 4110 (Prototyp), 50549-1,TF 3.3.3 B1, EREC G99, CEI-016, CEI-021 (more in progress)
EMC	IEC/EN 61000-6-1, IEC/EN 61000-6-2, IEC/EN 61000-6-3, IEC/EN 61000-6-4
Environment	ETSI EN 300 019:2-1 (Class 1.2), ETSI EN 300 019:2-2 (Class 2.3), ETSI EN 300 019:2-3 (Class 3.2)