



MPS CONTAINERISED SYSTEM

COMPANY AND PRODUCT OVERVIEW



COMPANY PROFILE

Mictronix Power Systems (MPS) is an Australian founded and owned business located in Sydney, NSW. The company's core focus is to provide technically advanced, high quality, Australian made battery energy storage systems that are designed from inception to excel in challenging and mission critical environments.

MPS maintains a competitive advantage through a well-established and diversified mix of domestic and international supply chains. This mix of component sourcing leverages the technical leadership and economy of overseas suppliers, while also maintaining a commitment to design, assemble, test and manufacture the final products in Australia. This approach delivers an exceptional balance of quality, cost, performance, local standards compliance and reliability while continuously supporting Australian businesses, local customers and the economy.

With its foundations in Australia, Mictronix Power Systems has proven its ability to quickly adapt to local changes of standards, compliance requirements, industry trends and market conditions to continuously meet the specific needs and demands of customers throughout the nation. This is achieved through continuous research and development leading to bespoke innovations in reliability, monitoring, control and ease of installation.

Mictronix Power Systems also maintains strong relationships with leading national distributors to supply and support its products across the country. This network of acclaimed industry experts provides pre-sales, technical, logistical and aftermarket services to ensure the selected MPS batteries are fit for purpose, widely available, properly implemented and receive a high degree of support throughout their lifecycle. MPS' focus on close collaboration throughout the vertical supply chain, from core component suppliers through to local installers, delivers product support and a quality guarantee that distinguishes the company throughout the industry.

With 23 years of experience in the electrical industry and over 1700 deployed batteries currently supporting government, industrial, commercial and domestic customers, Mictronix Power Systems offers assurance of local knowledge and support, extensive industry experience, product quality, cost effectiveness and high long-term system performance.

PRODUCT OVERVIEW

The MPS Containerised System is a self-contained, highly integrated, all-in-one power solution designed to deliver rapid, cost effective and reliable electricity supply to a diverse range of use cases across Australia. The solution combines two independent high-capacity MPS batteries and all associated safety, cooling and power conversion equipment in a single environmentally hardened, portable unit. This product allows customers to rapidly deploy on-site power capacity with substantially reduced installation lead time, effort and cost when compared to conventional localised power systems, such as primary diesel generation or fixed renewable energy systems.

The MPS Containerised System is housed in a thermally enhanced high strength and robust ISO standard intermodal shipping container, making transport from the Australian manufacturing facility to any site a straight-forward process that utilises well established logistical capability across the country, including road, rail and even sea routes of transport.



ISO standard container housing simplifies transport while providing a safe, robust permanent enclosure.

With portability of the product being a core design principle, redeployment and reuse of the system between sites as energy needs change is inherently supported, increasing the potential lifespan and return on investment for customers with distributed, expanding or changing footprints.

The containerised enclosure, environmental protection and built-in closed-loop climate control system provides a high-strength, secure and weather resistant enclosure that allows deployment to locations previously unsuitable for large independent power systems, including remote areas, less secure sites, facilities with limited opportunity for expansion of electrical infrastructure and sites where hazards, environmental conditions or timeframes would preclude installation of a conventional power system.

Assembly and testing of the batteries, inverters, wiring, switchgear, cooling system and safety features is completed in a controlled manufacturing facility prior to delivery. As such the quality, consistency and reliability of the system can be guaranteed to a higher standard than may be possible in remote or challenging on-site environments. This also substantially reduces cost and lead-time of deployment, as the system requires only the simple

connection of input and output power feeds to be ready to operate, needing no specialist skills or equipment beyond the capability of a suitably qualified electrician.

The MPS Containerised System is designed and built using a modular approach that implements full redundancy of all power systems: dual batteries, switchgear and inverters enhance reliability and provide options for continued operation during maintenance, servicing or field replacement of individual components.

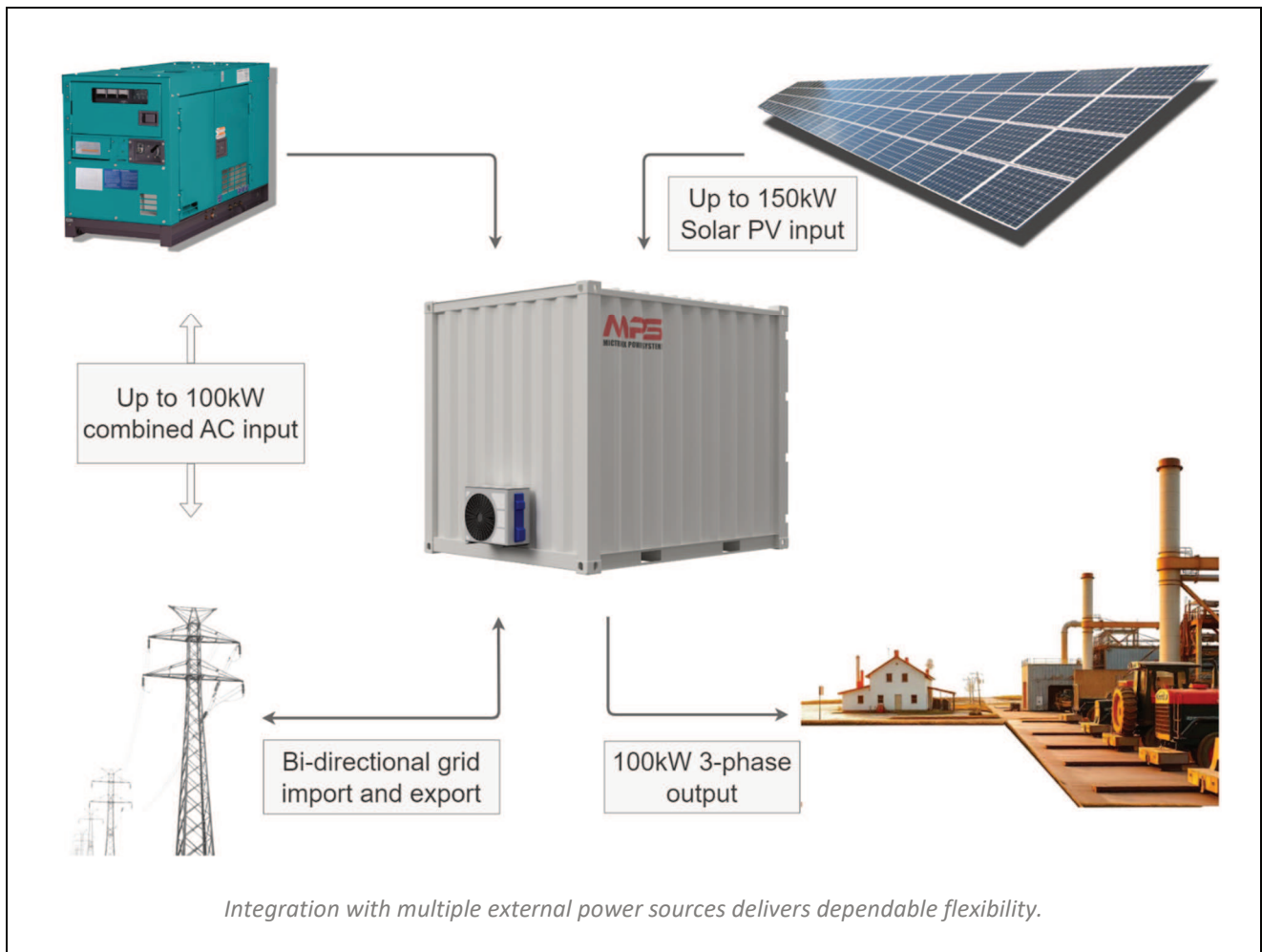


Manufacturing and testing in a controlled environment guarantees quality and reliability of the system.

The system can also operate without external infrastructure and supports a *dark-start* scenario when other power sources are unavailable. This can provide transitional power at remote or unprepared sites prior to supporting power inputs (solar, generator or grid) being established for the long term, and ensures the system can operate independently if external services are interrupted by disaster or other unplanned changes.

In addition to its off-grid and standalone capabilities, the MPS Containerised System is built to integrate with existing 3rd party power systems, allowing existing equipment and infrastructure to continue providing benefit and returns on investment. As such, existing diesel generators, grid power supplies and solar PV installations can all interoperate and enhance the functioning of the system by diversifying the power input and consumption patterns to suit operational or economic objectives. The system can:

- Store energy and provide continuous AC power output from solar PV sources.
- Accept power input from existing AC-coupled solar installations.
- Control and accept power input from an external generator, optimising use of fuel, regulating load, reducing maintenance cost and providing a constant power supply during generator maintenance or downtime.
- Accept input from a grid AC source, control usage and provide peak power output higher than the mains connection may be able to support.



As the MPS Containerised System is designed and built in Australia, it inherently supports installation to and coexistence with all relevant standards, including:

- ✓ AS/NZS 3000 - Wiring Rules
- ✓ AS/NZS 3010 - Generating Sets
- ✓ AS/NZS 4509 - Stand-alone Power Systems
- ✓ AS/NZS 4777 - Grid connection of energy systems via inverters
- ✓ AS/NZS 5033 - Installation and safety requirements for photovoltaic (PV) arrays
- ✓ AS/NZS 5139 - Electrical installations - Safety of battery systems for use with power conversion equipment

PRODUCT SPECIFICATIONS

CONTAINER:



Model	10ft 110kVA MPS containerised system
Weight	Approx. 4660kg
Length	3.048m $\pm 1\%$
Height	2.591m $\pm 1\%$
Width	2.438m $\pm 1\%$
Total maximum power output	100kW, 3 phase
Total maximum power input	Solar: 150kW, 8 MPPT Grid/generator: 100kW, 3 phase
Total battery capacity	418kWh
Temperature range	-10°C to 50°C

BATTERIES:



Model Number	MPS-HV-16
Nominal Voltage per module	51.2V
Nominal Capacity per module	314Ah
Nominal Capacity watt hours per module	16.08Kwh
Cell type	Prismatic
Cell configuration per module	1P 16S
Minimum battery modules per master controller	6
Maximum battery modules per master controller	13
Nominal system voltage range	307.2V – 665.6V
Minimum capacity (6 modules)	96.5 kWh
Maximum capacity (13 modules)	209 kWh
Cycle Life 95% DOD @ 25 degrees C	≥ 8,000 Cycles
Cycle Life 95% DOD @ 45 degrees C	≥ 3,200 Cycles
Capacity @ 0°C	270Ah
Capacity @ 55°C	317Ah
Depth of discharge	95%
Usable capacity per module	15.27 kWh
Inverter setpoint for depth of discharge	5%
Discharge Temperature range	-10 - 60°C
Charging Temperature range	5 - 60°C
Continuous Discharge Current	120A @ 25°C
Continuous Charge Current	120A @ 25°C
Maximum Discharge Current (Connector limited)	314A @ 25°C for 1 minute
Maximum Charge Current (Connector limited)	157A @ 25°C

Pulse Discharge Current (Connector limited)	628A @ 25°C for 10 sec
Continuous Discharge Power	6.14Kw @ 25°C
Maximum Discharge Power	16.08Kw @ 25°C for 1 minute
Over current protection	125A circuit breaker & electronic measures
Short circuit protection	125A, 1000V, 50kA replaceable fuse located in master controller
Cooling method	Natural convection
Casing material	Aluminium
Depth	755mm
Depth including handles	790mm
Width	415mm
Width with ears	485mm
Height	252mm (6RU)
Weight	105Kg
Mounting arrangement	Mounting horizontal with terminals facing forward only
IP rating	IP40
Maximum altitude	2000M
Humidity Range noncondensing	≤ 80% RH
Self-discharge Rate	≤ 3% Per Month
Warranty period	Refer to Mictronix warranty statement
Certifications (cell level)	GB/UN38.3 IEC62619

INVERTERS:



MODEL NUMBER	SUN-50K-SG01HP3-AU-BM4
Battery Type	Lithium-ion
Battery Voltage Range (V)	160-800
Max. Charging Current (A)	50+50
Max. Discharging Current (A)	50+50
Charging Strategy for Li-ion Battery	Self-adaption to BMS
Max. PV Input Power (W)	75000
Max. PV Input Voltage (V)	1000
Start-up Voltage (V)	180
MPPT Voltage Range (V)	150-850
Rated PV Input Voltage (V)	600
Max. Operating PV Input Current (A)	36+36+36+36
Max. Input Short-Circuit Current (A)	55+55+55+55
No. of MPP Trackers/ No. of Strings MPP Tracker	4/2+2+2+2
Rated AC Input/Output Active Power (W)	50000
Max. AC Input/Output Apparent Power (VA)	50000
Rated AC Input/Output Current (A)	72.5
Max. AC Input/Output Current (A)	72.5
Max. Continuous AC Passthrough (grid to load) (A)	200
Peak Power (off-grid) (W)	1.5 times of rated power, 10s
Power Factor Adjustment Range	0.8 leading to 0.8 lagging

Rated Input/Output Voltage/Range (V)	230/400V 0.85Un-1.1Un
Rated Input/Output Grid Frequency/Range (Hz)	50Hz/45Hz-55Hz
Grid Connection Form	3L+N+PE
Total Current Harmonic Distortion THDi	<3% (of nominal power)
DC Injection Current	<0.5% In
Max. Efficiency	97.60%
Euro Efficiency	97.0%
MPPT Efficiency	>99%
Integrated Equipment Protection	DC Polarity Reverse Connection Protection, AC Output Overcurrent Protection, Thermal Protection, AC Output Overvoltage Protection, AC Output Short Circuit Protection, DC Component Monitoring, Overvoltage Load Drop Protection, Ground Fault Current Monitoring, Arc Fault Circuit Interrupter (optional), Power Network Monitoring, Island Protection Monitoring, Earth Fault Detection, DC Input Switch, DC Terminal Insulation Impedance Monitoring, Residual Current (RCD) Detection, Surge protection level
Surge Protection Level	TYPE II(DC), TYPE II(AC)
Operating Temperature Range (°C)	-40 to +60°C, >45°C Derating
Permissible Ambient Humidity	0-100%
Permissible Altitude	2000m
Noise (dB)	≤65
Ingress Protection(IP) Rating	IP 65
Inverter Topology	Transformerless
Over Voltage Category	OVC II(DC), OVC III(AC)
Cabinet Size (WxHxD mm)	527×894×294 (Excluding Connectors and Brackets)
Weight (kg)	80
Type of Cooling	Intelligent Air Cooling
Grid Regulation	AS/NZS 4777.2
Safety / EMC Standard	IEC/EN 61000-6-1/2/3/4, IEC/EN 62109-1, IEC/EN 62109-2

SITE REQUIREMENTS

As a self-contained and prefabricated unit, the MPS containerised system has minimal pre-requisites for site readiness:

- **Foundations:** the container must be supported above ground level and anchored at all four corners using ISO standard intermodal shipping container mounting points. Suitable mounting options may include engineered piles, piers, concrete footing, concrete strips or slabs depending on local conditions.
- **Access:** A clear delivery path for a heavy rigid flatbed truck, utilising a tilt tray or optional crane for unloading.
- **Power inputs and outputs:** The MPS containerised system provides 3-phase power output that must be connected to a local, external switchboard and circuit breakers for distribution according to Australian electrical standards.
Safe and compliant cable paths to the container must be established for all inputs and outputs.
Power input from generator, solar PV or grid sources must also be installed and connected to comply with relevant Australian electrical standards and the inverter manufacturer specifications.
- **Security:** The MPS containerised system is sealed and secured by-design and lockable with protected, steel encapsulated padlocks. The site should be secured to ensure vandalism and theft is appropriately prevented.
- **Environment:** The container must be situated in an area clear of environmental hazards to prevent excessive exposure to heat, chemicals, dust, fumes, vapours, vibration, fire risks, close vehicular movement and water or moisture.
- **Connectivity:** A permanent internet connection must be provided via Ethernet or Wi-Fi for remote monitoring and control to operate. Outbound connectivity on TCP ports 3000, 80, 443 and 8883 is required.

WARRANTY AND SERVICE

As the system is modular and contains field-replaceable units, each component is warranted against material, workmanship and manufacturing defects according to the original equipment manufacturers (OEM) warranty provisions. Below is a summary of the warranties provided:

- Inverters (*Deye*): 10 years from the date of installation, or 10 years from the date of delivery (whichever is sooner).
- Batteries (*MPS*): 10 years from the date of invoice when used within specified system limits¹.
- Cabling, switchgear and container: 10 years from the date of invoice.
- Air conditioner (*Gree*): 1 year

¹For full battery warranty terms and specifications, please visit Mictronix.com.au