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› WLLKIY Hybrid Solar Inverter User Manual

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WLLKIY Hybrid Solar Inverter User Manual

MODELS: SMG-II-3.6KW-24V-WIFI, SMG-II-5.6KW-48V-WIFI, SMX-II-3.6KW-24V, SMX-II-5.6KW-48V

1. Introduction

This manual provides essential information for the installation, operation, and maintenance of your WLLKIY Hybrid Solar Inverter. Please read this manual thoroughly before installation and operation to ensure proper functioning and safety. Keep this manual for future reference.

The WLLKIY Hybrid Solar Inverter is a versatile power solution designed to integrate solar power, utility grid power, and battery power to provide continuous power supply. It features a pure sine wave output, high PV input voltage range, and a built-in MPPT solar charge controller, making it suitable for various off-grid and hybrid solar applications.

2. Product Overview

The WLLKIY Hybrid Solar Inverter is a multi-functional inverter/charger, combining functions of an inverter, solar charger, and battery charger to offer uninterruptible power support with a portable size. Its comprehensive LCD display allows user-configurable and easy-accessible button operation such as battery charging current, AC/solar charger priority, and acceptable input voltage based on different applications.

- Pure sine wave solar inverter.
- High PV input voltage range (120V-450V).
- Built-in MPPT solar charge controller.
- The inverter can run without a battery (PV voltage must be above 250V).
- Built-in dust protection for remote monitoring in harsh environments.



Figure 2.1: Front view of the WLLKIY Hybrid Solar Inverter, showing the display panel and ventilation grilles.

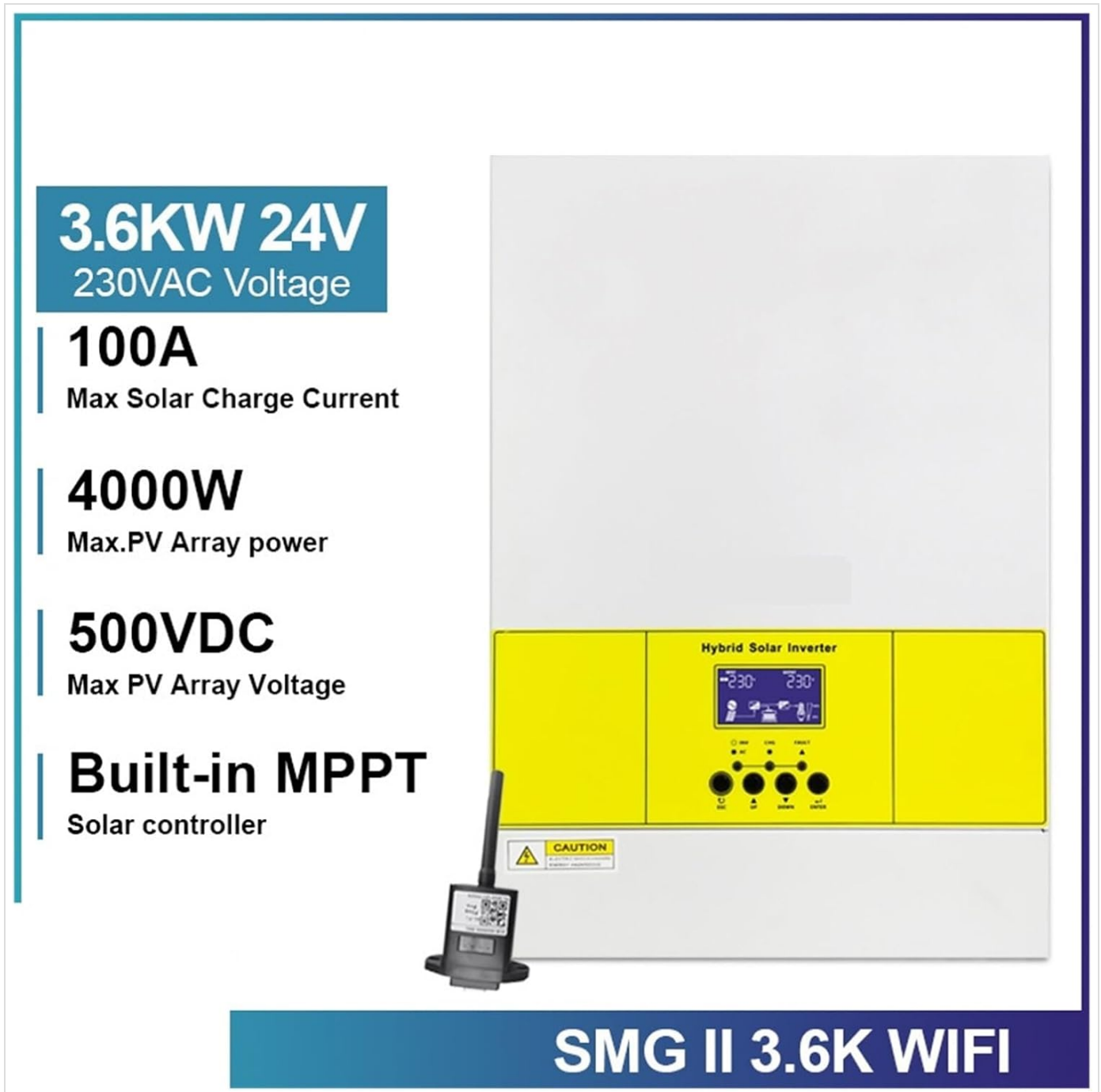


Figure 2.2: The inverter highlighting key specifications such as 3.6KW/24V, 100A Max Solar Charge Current, 4000W Max PV Array Power, 500VDC Max PV Array Voltage, and Built-in MPPT Solar Controller.

3. Safety Instructions

Please observe all warnings and cautions in this manual. Improper operation may cause damage to the unit and/or personal injury. This device is intended for indoor use only. Do not expose it to rain, snow, or any type of liquid.

- **High Voltage Warning:** The inverter operates with high voltages. All wiring must be performed by qualified personnel.
- **Battery Safety:** Batteries can produce explosive gases. Ensure proper ventilation when working with batteries. Do not short-circuit battery terminals.
- **Grounding:** The inverter must be properly grounded to prevent electric shock.
- **Ventilation:** Ensure adequate airflow around the inverter to prevent overheating. Do not block ventilation openings.

- **Supervision:** This product should be used under the direct supervision of an adult.

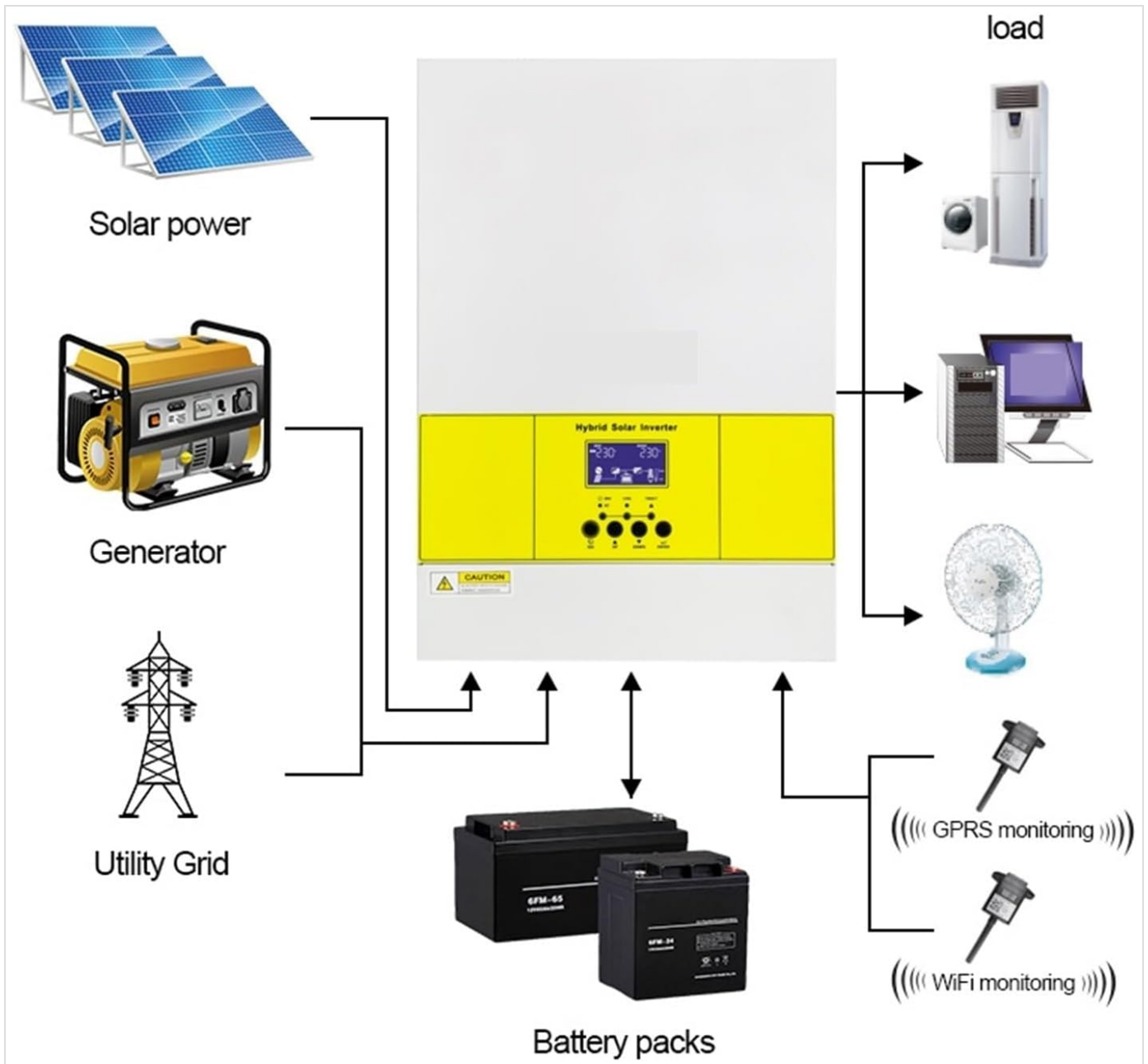
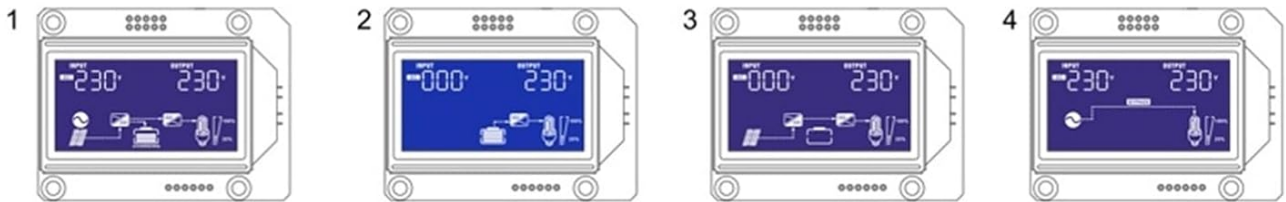
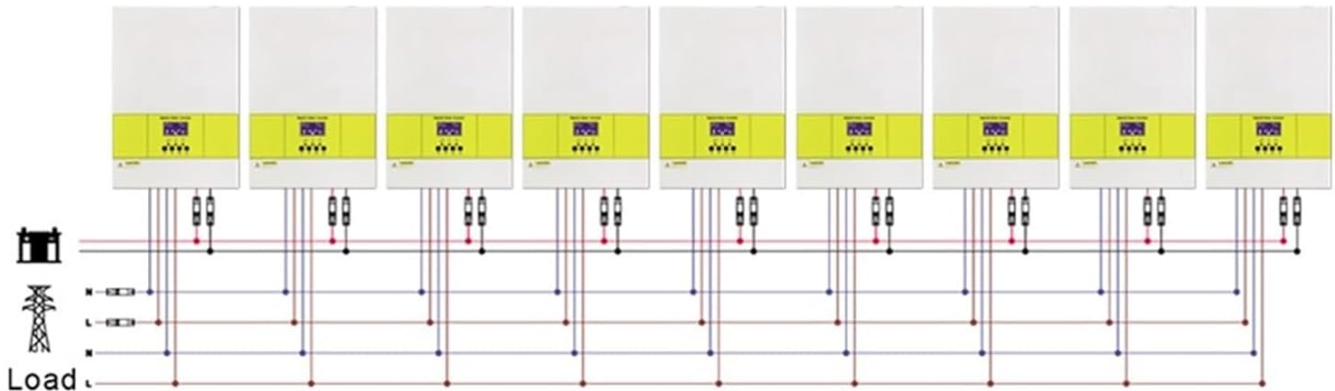


Figure 3.1: A multilingual warning label indicating that the product is to be used under the direct supervision of an adult.

4. Setup & Installation

Before installation, ensure all components are present and undamaged. Choose a suitable mounting location that is dry, well-ventilated, and away from flammable materials. The inverter should be mounted vertically.

4.1 System Connection Diagram



1. With battery, solar and AC available
2. With battery, solar and AC not available
3. Without battery, solar available
4. Without battery, AC available

Figure 4.1: A comprehensive system connection diagram illustrating how solar panels, a generator, the utility grid, and battery packs connect to the hybrid solar inverter, which then supplies power to various household and office loads.

4.2 Wiring Connections

Refer to the back panel of the inverter for connection terminals. Ensure all connections are secure and correctly polarized.

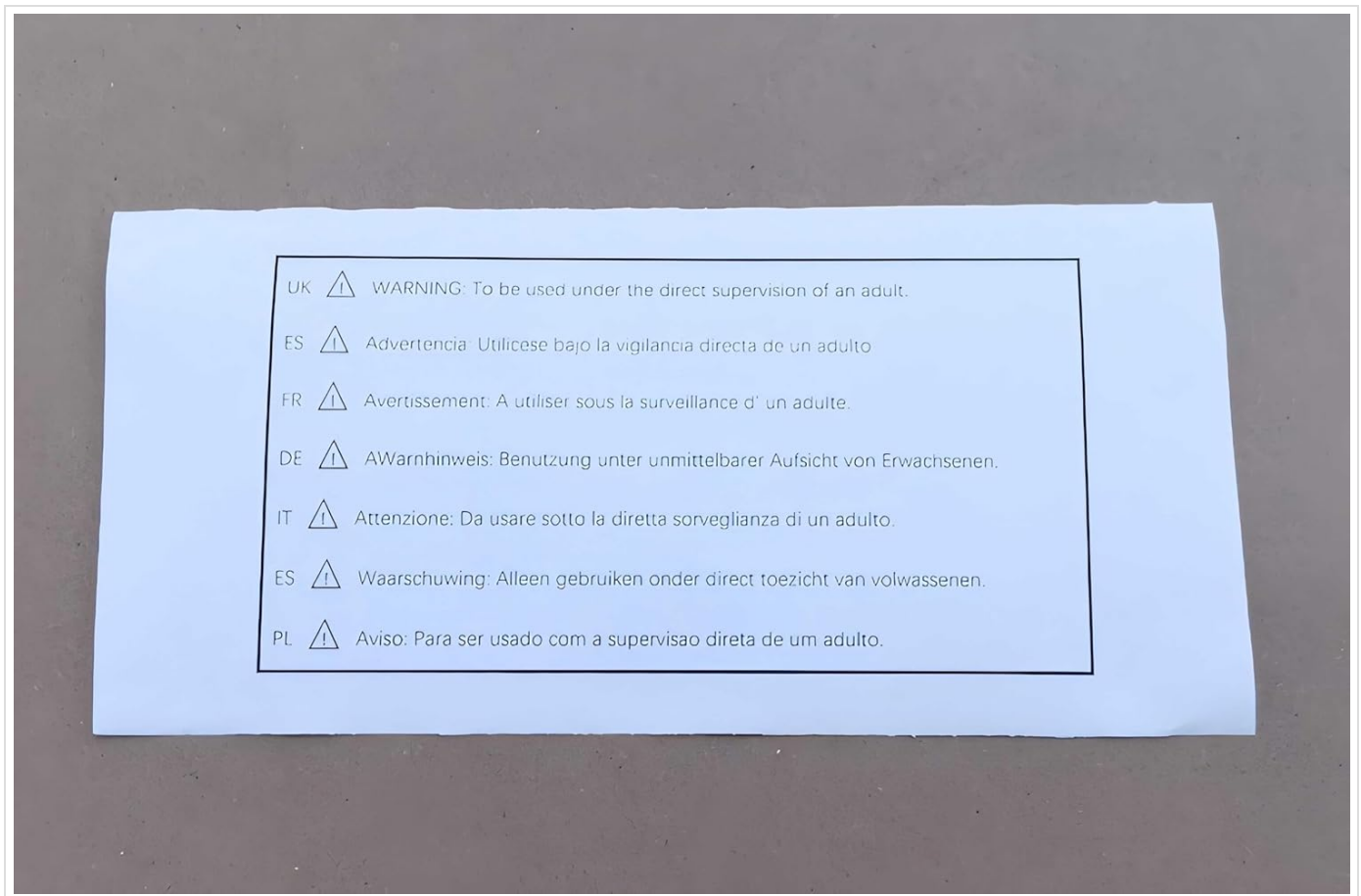


Figure 4.2: The back panel of the inverter, detailing connection points for AC input (AC IN), AC output (AC OUT), PV input (PV IN), RS232, USB, battery positive (POS) and negative (NEG) terminals, and the input breaker.

- **Battery Connection:** Connect the battery bank to the 'BATTERY POS' and 'BATTERY NEG' terminals. Ensure correct polarity.
- **AC Input Connection:** Connect the utility grid or generator AC supply to the 'AC IN' terminal.
- **AC Output Connection:** Connect your loads (appliances, computers, etc.) to the 'AC OUT' terminal.
- **PV Input Connection:** Connect your solar panel array to the 'PV IN' terminals. Observe correct polarity and voltage limits.
- **Communication Ports:** Use the RS232 or USB ports for monitoring and configuration with compatible software.

5. Operating Modes

The inverter supports various operating modes, which can be configured via the LCD display. These modes determine the power source priority (utility, solar, or battery) for supplying power to the loads and charging the batteries.



Figure 5.1: Display illustrations showing four operating modes: 1. With battery, solar and AC available. 2. With battery, solar and AC not available. 3. Without battery, solar available. 4. Without battery, AC available. This image also shows a 'Pure Sine Wave 50/60 Hz Auto Detection' graphic.

- **Utility Priority Mode:** The inverter primarily uses utility power to supply loads and charge batteries. Solar power is used when utility power is unavailable or insufficient.
- **Solar Priority Mode:** Solar power is the primary source for loads and battery charging. Utility power is used only when solar power is insufficient or unavailable.
- **Battery Priority Mode:** The inverter uses battery power as the primary source. Utility or solar power is used to charge batteries or when battery voltage is low.
- **No Battery Mode:** Certain models can operate without a battery, directly converting solar PV power to AC for loads, provided the PV voltage is above 250V.

6. Specifications

The following table provides detailed technical specifications for the WLLKIY Hybrid Solar Inverter models.

Feature	SMG II 3.6KW	SMG II 5.6KP	SMX-II-3.6KW	SMX-II-5.6KP
Capacity	3.6KVA/3.6KW	5.6KVA/5.6KW	3.6KVA/3.6KW	5.6KVA/5.6KW
Parallel Ability	NO	YES, 1-9pcs	NO	YES, 1-6pcs
Acceptable Voltage Range	170-280VAC (for personal computers); 90-280VAC (for home appliances)			
Frequency	50/60Hz (Auto Sensing)			
Surge Power	7000VA	11000VA	6000VA	10000VA
Wave Shape	Pure Sine Wave			
Transfer Time	10 Ms (for personal computer); 20 Ms (for home appliances)			
Peak Efficiency (PV to INV)	96%	>95%	96%	>95%
Peak Efficiency (Battery to INV)	93%	>92%	93%	>90%
Overload Protection	5s@>=150%load; 10s@110%-150%load; Alarm and turn off charging after 1 minute			
Power Factor	1			
Battery Volts	24VDC	48VDC	24VDC	48VDC
Float Charging Voltage	27VDC	54VDC	27.6VDC	55.2VDC
Overcharge Protection	33VDC	63VDC	30VDC	60VDC
Solar Charger Type	MPPT			
Max PV Array Power	4000W	5500W	4000W	6000W
Max PV Array Open Circuit Voltage	500VDC			
PV Array MPPT Voltage Range	120VDC - 450VDC			
Max Solar Input Current	15A	18A	15A	18A
Max Solar Charging Current	100A	80A	100A	80A
Max AC Charging Current	60A	80A	60A	80A
Max Charge Current	100A	80A	100A	80A
Dimensions (LxWxH)	482x290x113 mm	378x280x103 mm	426x322x126 mm	426x322x126 mm
Net Weight	9 kg	10 kg	8.5 kg	11 kg
Operating Temperature Range	-10 to 50 °C			
Storage Temperature	-15 to 60 °C			
Humidity	5% to 95% relative humidity (not condensing)			

7. Troubleshooting

This section provides solutions to common issues you may encounter with your inverter. For problems not listed here, please contact customer support.

- **Inverter not turning on:** Check battery connections, ensure battery voltage is within operating range, verify AC input connection if applicable, and check the input breaker.
- **No AC output:** Check for overload conditions, ensure the inverter is not in fault mode, verify AC output wiring, and check if the utility grid is present if in utility priority mode.
- **Battery not charging:** Verify solar panel connections and voltage, check AC input if AC charging is enabled, ensure charge settings are correct on the display.
- **Overload alarm:** Reduce the connected load. The inverter will automatically restart after a cool-down period if the overload is removed.

8. Maintenance

Regular maintenance ensures the longevity and optimal performance of your inverter.

- **Cleaning:** Periodically clean the inverter's exterior with a dry cloth. Ensure ventilation openings are free from dust and debris.
- **Connection Check:** Annually inspect all wiring connections for tightness and signs of corrosion.
- **Battery Inspection:** If using lead-acid batteries, check electrolyte levels and terminal cleanliness regularly.
- **Environmental Check:** Ensure the installation environment remains within specified temperature and humidity ranges.

9. Warranty and Support

WLLKIY products are manufactured to high-quality standards. For warranty information, please refer to the warranty card included with your product or contact your point of purchase. For technical support or service inquiries, please reach out to WLLKIY customer service.

Manufacturer: WLLKIY