POWLSOJX 700W

POWLSOJX Solar Grid Tie Micro Inverter 700W User Manual

Model: 700W

1. Introduction

The POWLSOJX Solar Grid Tie Micro Inverter is designed to convert direct current (DC) from solar panels into alternating current (AC) for direct use in your home or to feed into the utility grid. This 700W model features Maximum Power Point Tracking (MPPT) to optimize power generation and produces a pure sine wave output, ensuring compatibility with various electrical appliances. This manual provides essential information for safe installation, efficient operation, and proper maintenance of your micro inverter.



Image 1: POWLSOJX 700W Solar Grid Tie Micro Inverter. This image shows the compact, silver-colored micro inverter unit with its input and output connectors.

2. Safety Information

- Read all instructions carefully before installation and operation.
- Installation must be performed by qualified personnel in accordance with local electrical codes and regulations.
- Ensure the DC input voltage from solar panels does not exceed the inverter's maximum input voltage (50V for this model).
- Disconnect all power sources (solar panels and AC grid) before performing any maintenance or wiring.
- The inverter can become hot during operation. Avoid touching it directly without proper precautions.
- Ensure proper ventilation around the inverter to prevent overheating.
- This inverter is designed for grid-tie applications only. Do not use it in off-grid systems without appropriate additional equipment.
- The inverter features island protection, which automatically shuts down the unit if the utility grid fails, preventing back-feeding into a de-energized grid.

3. Product Features

- **Powerful MPPT Algorithm:** The built-in Maximum Power Point Tracking (MPPT) optimizes power collection from solar panels, accurately capturing the point of maximum output power to significantly increase power generation.
- **Reverse Transmission:** Utilizes reverse transmission technology with high efficiency (99.9%), transmitting power in the reverse direction in grid-connected output mode. It automatically detects and prioritizes loads in the circuit, improving transmission efficiency.
- **Pure Sine Wave Output:** Employs SPWM technology to generate a pure sine wave directly, ensuring good waveform, low distortion, and low noise. This makes it suitable for sensitive electronic devices and communication equipment.
- **Grid-connected Stacking Mode:** Multiple inverters can be stacked and connected in parallel for grid-connected power generation. The inverters receive and synchronize with a main control signal from the monitoring system.
- **Wide DC Input Range:** Designed for 20-50V solar panels (Note: The 180W model supports a maximum of 30V).
- **IP65 Waterproof Grade:** Prevents rainwater intrusion and offers resistance to acid, alkali, and oxidation.



Image 2: Visual representation of key features including stable performance, quality assurance, anti-corrosion, multiple protections, cost-effectiveness, and frequency protection.



Image 3: The micro inverter demonstrating its IP65 waterproof rating, indicating protection against water and environmental elements.

4. Setup and Installation

Proper installation is crucial for the safe and efficient operation of your micro inverter. Follow these general steps. For detailed wiring diagrams and specific requirements, consult a qualified electrician.

1. **Mounting:** Securely mount the micro inverter in a well-ventilated area, preferably out of direct sunlight to aid in heat dissipation. Ensure the mounting surface is stable and can support the weight of the unit.
2. **DC Connection:** Connect the DC output cables from your solar panels to the DC input terminals of the micro inverter. Ensure correct polarity (+ to + and - to -). The input voltage should be within the specified range of 20-50V.
3. **AC Connection:** Connect the AC output cable from the micro inverter to your home's electrical panel or a dedicated AC outlet, ensuring it is properly grounded. This connection must be made through a circuit breaker for safety.
4. **Grid Connection:** The inverter is designed to synchronize with the utility grid. Once connected, it will automatically detect the grid and begin power generation.
5. **Multiple Units (Stacking):** If installing multiple micro inverters, they can be connected in parallel to the AC grid. Ensure each inverter is properly connected and grounded.

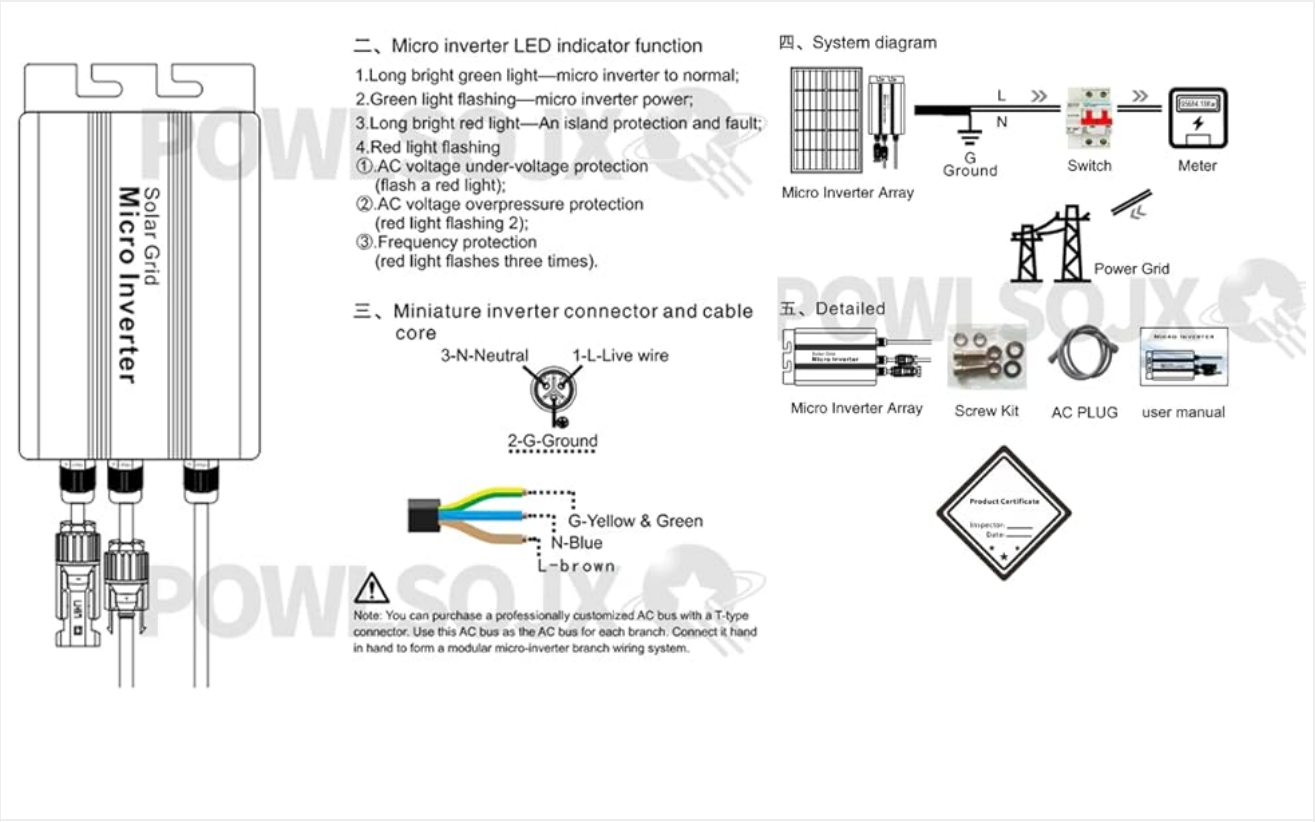


Image 4: A detailed diagram illustrating the typical installation setup, including solar panel array, micro inverter, ground connection, switch, and utility meter.

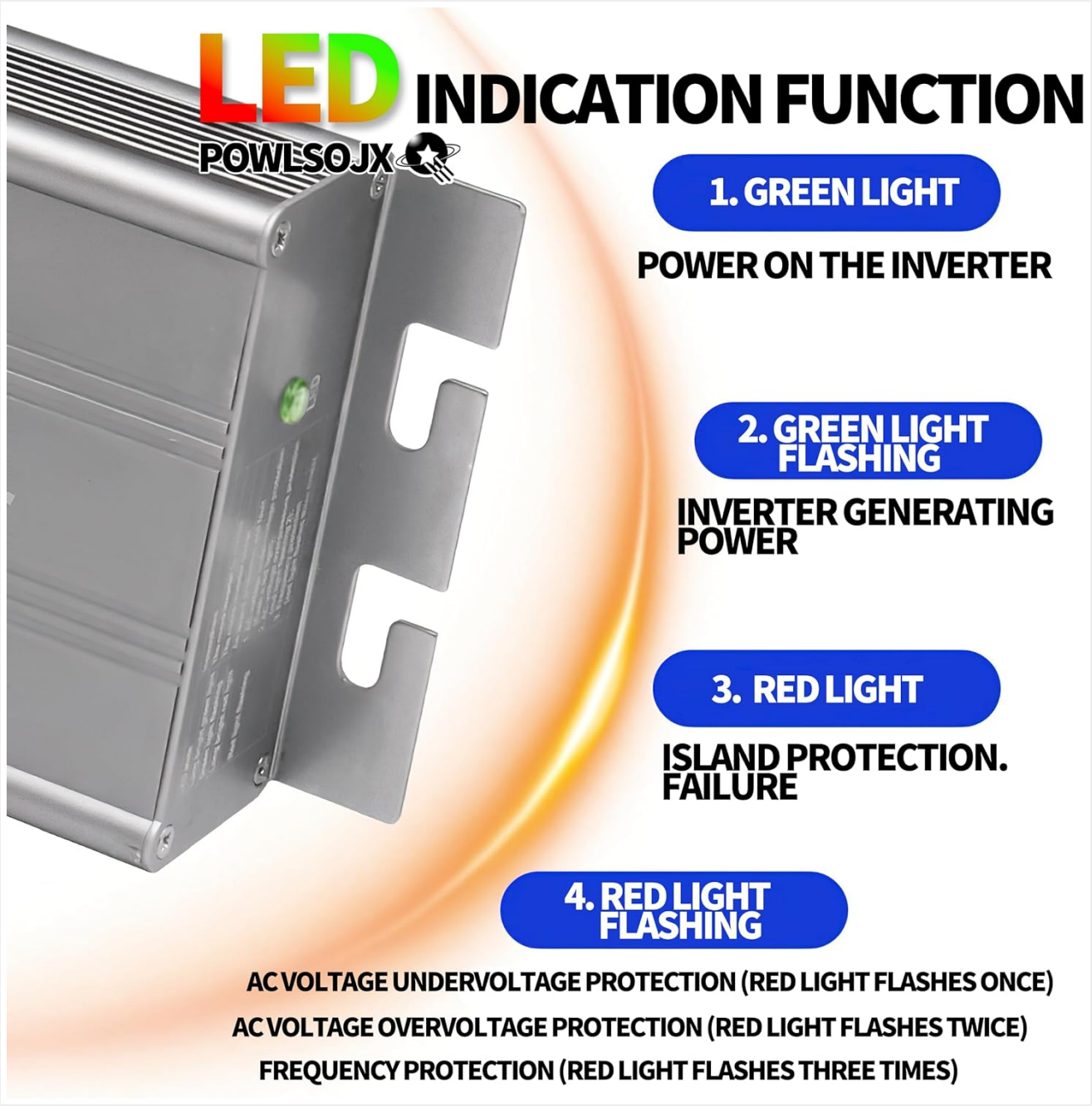


Image 5: Dimensional drawings for the T180 and T700/T500 models, showing length, width, and height in centimeters/inches and millimeters/inches respectively.

5. Operating Instructions

Once properly installed and connected, the POWLSOJX Micro Inverter operates largely automatically. It will detect the presence of the utility grid and, if conditions are suitable (sufficient solar input, correct grid voltage/frequency), it will begin converting DC power from your solar panels into AC power.

- **Automatic Start-up:** The inverter will automatically start operating when sufficient DC power is supplied from the solar panels and the AC grid is detected.
- **MPPT Function:** The integrated MPPT algorithm continuously tracks the maximum power point of the solar panels to ensure optimal energy harvest throughout the day, adapting to changing sunlight conditions.
- **Grid Synchronization:** The inverter synchronizes its output frequency and voltage with the utility grid to ensure seamless power injection.
- **Shutdown:** The inverter will automatically shut down if the solar input is too low, the grid is disconnected (island protection), or if an internal fault is detected.

6. LED Indication Function

The LED indicator on the micro inverter provides visual feedback on its operational status and any potential issues. Observe the LED to understand the inverter's current state:

- **Green Light (Solid):** Indicates the micro inverter is powered on and operating normally.
- **Green Light (Flashing):** Indicates the micro inverter is generating power. The flash rate may vary with power output.
- **Red Light (Solid):** Indicates an island protection event or a general failure. The inverter has disconnected from the grid for safety.
- **Red Light (Flashing):** Indicates specific protection events:
  - Flashes once: AC voltage undervoltage protection.
  - Flashes twice: AC voltage overvoltage protection.
  - Flashes three times: Frequency protection.

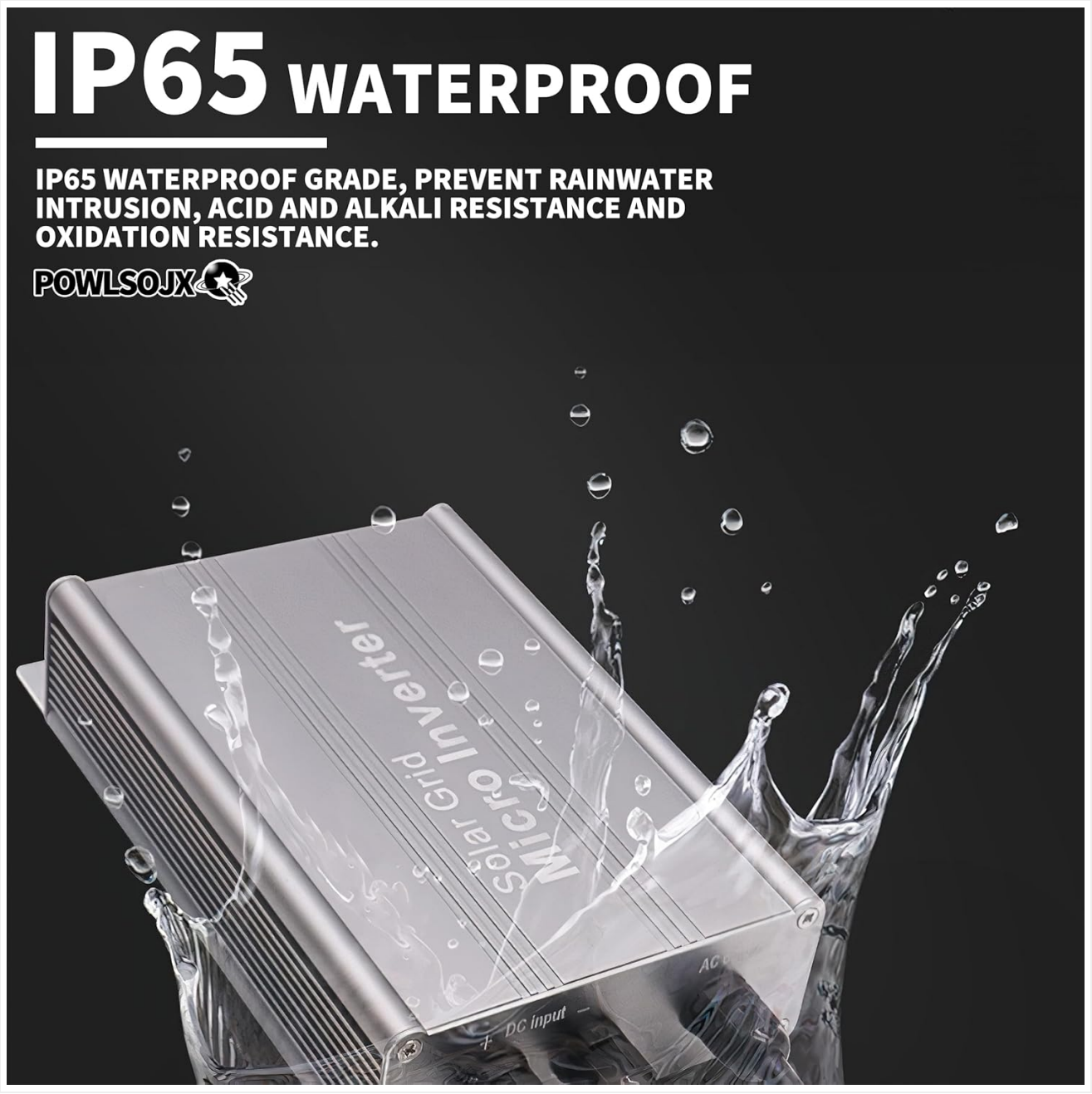
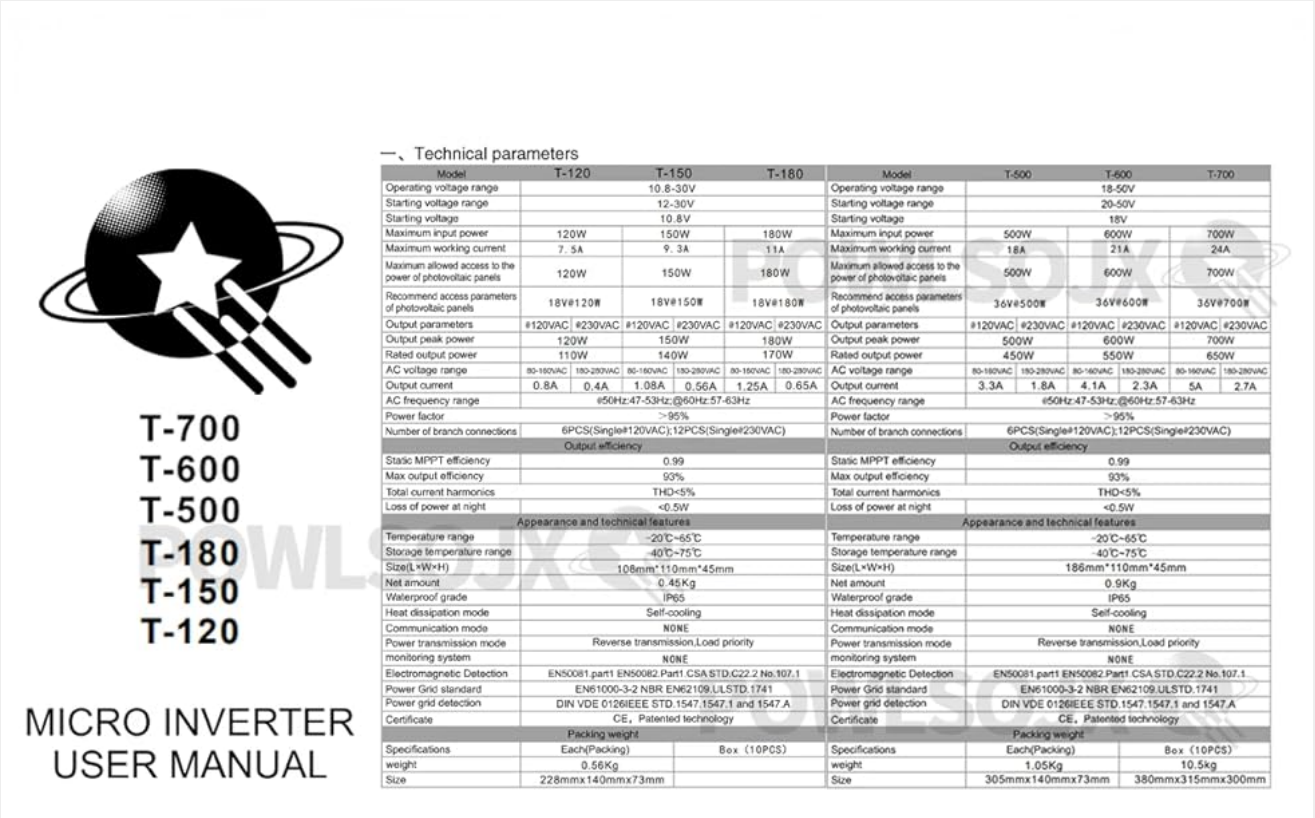


Image 6: Diagram explaining the different states of the LED indicator light on the micro inverter, corresponding to power status, power generation, and various protection modes.

7. Technical Specifications

The following table outlines the key technical specifications for the POWLSOJX Solar Grid Tie Micro Inverter 700W model:



Model	T-120		T-150		T-180	
Operating voltage range	10.8-30V					
Starting voltage range	12-30V					
Starting voltage	10.8V					
Maximum input power	120W		150W		180W	
Maximum working current	7.5A		9.3A		11A	
Maximum allowed access to the power of photovoltaic panels	120W		150W		180W	
Recommend access parameters of photovoltaic panels	18V@120W		18V@150W		18V@180W	
Output parameters	#120VAC	#230VAC	#120VAC	#230VAC	#120VAC	#230VAC
Output peak power	120W		150W		180W	
Rated output power	110W		140W		170W	
AC voltage range	80-160VAC	180-280VAC	80-160VAC	180-280VAC	80-160VAC	180-280VAC
Output current	0.8A	0.4A	1.08A	0.56A	1.25A	0.65A
AC frequency range	@50Hz:47-53Hz;@60Hz:57-63Hz					
Power factor	>95%					
Number of branch connections	6PCS(Single@120VAC);12PCS(Single@230VAC)					
Output efficiency						
Static MPPT efficiency	0.99					
Max output efficiency	93%					
Total current harmonics	THD<5%					
Loss of power at night	<0.5W					
Appearance and technical features						
Temperature range	-20℃~65℃					
Storage temperature range	-40℃~75℃					
Size(L*W*H)	108mm*110mm*45mm					
Net amount	0.45Kg					
Waterproof grade	IP65					
Heat dissipation mode	Self-cooling					
Communication mode	NONE					
Power transmission mode	Reverse transmission,Load priority					
monitoring system	NONE					
Electromagnetic Detection	EN50081.part1 EN50082.Part1 CSA.STD.C22.2 No.107.1					
Power Grid standard	EN61000-3-2 NBR EN62109.ULSTD.1741					
Power grid detection	DIN VDE 0126IEEE STD.1547.1547.1 and 1547.A					
Certificate	CE，Patented technology					
Packing weight						
Specifications	Each(Packing)		Box (10PCS)			
weight	0.56Kg					
Size	228mmx140mmx73mm					

Model	T-500		T-600		T-700	
Operating voltage range	18-50V					
Starting voltage range	20-50V					
Starting voltage	18V					
Maximum input power	500W		600W		700W	
Maximum working current	18A		21A		24A	
Maximum allowed access to the power of photovoltaic panels	500W		600W		700W	
Recommend access parameters of photovoltaic panels	36V@500W		36V@600W		36V@700W	
Output parameters	#120VAC	#230VAC	#120VAC	#230VAC	#120VAC	#230VAC
Output peak power	500W		600W		700W	
Rated output power	450W		550W		650W	
AC voltage range	80-160VAC	180-280VAC	80-160VAC	180-280VAC	80-160VAC	180-280VAC
Output current	3.3A	1.8A	4.1A	2.3A	5A	2.7A
AC frequency range	@50Hz:47-53Hz;@60Hz:57-63Hz					
Power factor	>95%					
Number of branch connections	6PCS(Single@120VAC);12PCS(Single@230VAC)					
Output efficiency						
Static MPPT efficiency	0.99					
Max output efficiency	93%					
Total current harmonics	THD<5%					
Loss of power at night	<0.5W					
Appearance and technical features						
Temperature range	-20℃~65℃					
Storage temperature range	-40℃~75℃					
Size(L*W*H)	186mm*110mm*45mm					
Net amount	0.9Kg					
Waterproof grade	IP65					
Heat dissipation mode	Self-cooling					
Communication mode	NONE					
Power transmission mode	Reverse transmission,Load priority					
monitoring system	NONE					
Electromagnetic Detection	EN50081.part1 EN50082.Part1 CSA.STD.C22.2 No.107.1					
Power Grid standard	EN61000-3-2 NBR EN62109.ULSTD.1741					
Power grid detection	DIN VDE 0126IEEE STD.1547.1547.1 and 1547.A					
Certificate	CE，Patented technology					
Packing weight						
Specifications	Each(Packing)		Box (10PCS)			
weight	1.05Kg		10.5kg			
Size	305mmx140mmx73mm		380mmx315mmx300mm			

Image 7: A comprehensive table detailing technical parameters for various POWLSOJX Micro Inverter models, including operating voltage, maximum power, output voltage, frequency, efficiency, and environmental conditions.

POWLSOJX 700W Micro Inverter Specifications

Parameter	Value
Brand	POWLSOJX
Model Name	Solar Grid Micro Inverter
Output Power	700 Watts
Peak Output Power Watts	700
Inverter Capacity Volt-Amp	700
Input Voltage	18V-50V DC
Output Voltage	120V / 230V AC (Auto)
Frequency	50 Hz / 60 Hz (Auto)
Electrical Output Waveform	Pure Sine Wave
MPPT Efficiency	Optimized for >25% power generation increase
Reverse Transmission Efficiency	99.9%
Item Weight	1.03 Kilograms
Protection Grade	IP65 Waterproof
Energy Specifications Met	UL

8. Maintenance

Regular maintenance ensures the longevity and optimal performance of your POWLSOJX Micro Inverter.

- **Cleaning:** Periodically clean the exterior of the inverter to remove dust and debris. Use a soft, dry cloth. Do not use harsh chemicals or abrasive cleaners.
- **Inspection:** Regularly inspect all electrical connections for tightness and signs of corrosion or damage. Ensure cables are not frayed or exposed.
- **Ventilation:** Ensure that the area around the inverter remains clear and well-ventilated to allow for proper heat dissipation. Blocked vents can lead to overheating and reduced performance.
- **Heat Management:** While the inverter is designed to dissipate heat, prolonged operation at high temperatures can affect its lifespan. Consider additional passive cooling measures (like mounting on a heat-dissipating surface) or active cooling (fans) if the inverter consistently runs very hot, especially in enclosed spaces or hot climates.



Image 8: An internal view highlighting components related to the cooling system, emphasizing the importance of heat dissipation for optimal performance.

9. Troubleshooting

If you encounter issues with your micro inverter, refer to the LED indication section (Section 6) for error codes. Here are some common troubleshooting steps:

- **No Power Output / Inverter Not Starting:**
  - Check DC input from solar panels: Ensure sufficient sunlight and that panel connections are secure and correct polarity. Verify panel voltage is within the 20-50V range.
  - Check AC grid connection: Ensure the AC cable is securely connected to the grid and the circuit breaker is on. Verify grid voltage and frequency are stable.
  - Observe LED: A solid red light indicates a fault or island protection. A flashing red light indicates specific voltage/frequency issues.
- **Low Power Output:**
  - Solar panel performance: Ensure panels are clean, free of shading, and optimally angled towards the sun.
  - Overheating: If the inverter is excessively hot, it may reduce output to protect itself. Ensure adequate ventilation and consider additional cooling.
  - DC input voltage: Ensure the solar panel voltage is within the optimal operating range for the inverter.
- **Inverter Overheating:**
  - Ensure the inverter is mounted in a location with good airflow.
  - Avoid direct exposure to intense sunlight, especially during peak operating hours.

- Consider mounting the inverter on a larger metal surface or adding a small fan for active cooling if operating in high ambient temperatures or enclosed spaces.

10. Warranty and Support

The POWLSOJX Solar Grid Tie Micro Inverter comes with a manufacturer's warranty. For specific details regarding warranty coverage, duration, and claims, please refer to the warranty card included with your product or contact POWLSOJX customer support directly. Keep your purchase receipt as proof of purchase.

For technical assistance, troubleshooting beyond this manual, or spare parts, please contact the seller or POWLSOJX customer service. Provide your product model number (700W) and serial number (if applicable) when seeking support.