

COTEK SP2000-224

COTEK SP2000-224 Pure Sine Wave Inverter User Manual

Model: SP2000-224

1. INTRODUCTION

This manual provides essential information for the safe and efficient operation of your COTEC SP2000-224 Pure Sine Wave Inverter. This advanced inverter offers high efficiency and power density, featuring selectable output voltage and frequency, all housed within a robust aluminum casing. Please read this manual thoroughly before installation and use to ensure proper function and longevity of the device.

2. SAFETY INFORMATION

Always observe the following safety precautions to prevent injury and damage to the inverter or connected equipment:

- **Ventilation:** Ensure adequate ventilation around the inverter. Do not block ventilation openings.
- **Environment:** Install the inverter in a dry, cool, and well-ventilated area, away from direct sunlight, heat sources, and flammable materials.
- **Grounding:** Properly ground the inverter chassis to prevent electrical shock.
- **DC Input:** Connect the inverter only to a 24V DC battery bank. Ensure correct polarity (positive to positive, negative to negative). Reverse polarity will damage the unit.
- **AC Output:** Do not overload the inverter. Ensure the total wattage of connected AC devices does not exceed the inverter's rated output.
- **Servicing:** Do not attempt to open or service the inverter yourself. Refer all servicing to qualified personnel.
- **Water Exposure:** Keep the inverter away from water, rain, or excessive moisture.

3. PRODUCT FEATURES

The COTEC SP2000-224 Inverter incorporates several advanced features for reliable power conversion:

- Pure sine wave output for sensitive electronics.

- Power ON / OFF remote control capability via a dedicated green terminal.
- Full input and output isolation for enhanced safety.
- Temperature and load-controlled cooling fan for efficient heat dissipation.
- User-friendly interface with 3-color LED status indicators.
- Output frequency selectable between 50 Hz and 60 Hz via DIP switch.
- Output voltage selectable via DIP switch.
- Power saving mode adjustable via a variable resistor.
- Comprehensive input protection: Reverse Polarity (via fuse), Under Voltage, Over Voltage.
- Comprehensive output protection: Short Circuit, Overload, Over Temperature.
- Certifications: E13, UL, CE, FCC approved.

4. SETUP AND INSTALLATION

Proper installation is crucial for the inverter's performance and safety.

4.1 Physical Installation

Mount the inverter securely in a location that meets the safety requirements mentioned in Section 2. Ensure sufficient space around the unit for airflow.



Figure 4.1: Angled view of the COTEC SP2000-224 Pure Sine Wave Inverter, showcasing its robust blue and gray casing.

4.2 DC Input Connection

Connect the inverter to a 24V DC battery bank using appropriate gauge cables. Ensure the positive (+) terminal of the inverter connects to the positive terminal of the battery, and the negative (-) terminal of the inverter connects to the negative terminal of the battery. Install an appropriate fuse or circuit breaker in the positive DC line close to the battery.



Figure 4.2: Rear view of the inverter, highlighting the DC input terminals (red for positive, black for negative), the chassis ground screw, and the remote control terminal.

4.3 Chassis Ground Connection

Connect the chassis ground terminal (labeled 'CHASSIS GROUND') to a reliable earth ground point. This is a critical safety step.

4.4 AC Output and Controls

The inverter features a standard AC outlet and control switches on its front panel.



Figure 4.3: Front view of the inverter, displaying the AC output socket, the main power switch, LED indicators, and DIP switches for configuration.

4.5 DIP Switch Settings

The inverter features DIP switches for configuring output frequency and voltage. Refer to the specifications table (Section 7) or the product label for specific settings. Ensure the inverter is powered off before adjusting DIP switches.

- **Output Frequency:** Select 50 Hz or 60 Hz based on your regional requirements.
- **Output Voltage:** Select the desired AC output voltage (e.g., 230VAC for this model).

5. OPERATING INSTRUCTIONS

5.1 Powering On/Off

After all connections are secure and verified, switch the main power button on the inverter to the 'ON' position.

The LED indicators will illuminate to show the inverter's status. To power off, switch the button to 'OFF'. A remote control terminal is also available for external ON/OFF control.

5.2 LED Indicators

The 3-color LED indicators provide visual feedback on the inverter's operational status and any potential faults. Consult the product documentation or the specifications table for a detailed explanation of each LED state.

5.3 Power Saving Mode

The power saving mode can be adjusted via a variable resistor. This feature helps reduce quiescent current draw when no load or a very light load is connected, conserving battery power.

5.4 Connecting AC Loads

Plug your AC appliances into the inverter's AC output socket. Ensure the total power consumption does not exceed the inverter's continuous power rating (2000W for this model). For inductive loads (e.g., motors, refrigerators), consider their surge power requirements, which can be significantly higher than their running power.

6. MAINTENANCE

Regular maintenance ensures optimal performance and extends the lifespan of your inverter.

- **Cleaning:** Keep the inverter clean and free from dust. Use a dry cloth to wipe the exterior. Do not use liquid cleaners.
- **Ventilation:** Periodically check that the cooling fan and ventilation openings are clear of obstructions.
- **Connections:** Inspect all DC and AC connections regularly to ensure they are tight and free from corrosion. Loose connections can cause overheating and poor performance.
- **Battery Maintenance:** Follow the manufacturer's recommendations for your battery bank's maintenance.

7. TROUBLESHOOTING

If the inverter is not functioning correctly, refer to the following common issues and solutions:

- **No Output Power:**
 - Check DC input connections and battery voltage.
 - Verify the inverter's power switch is ON.
 - Check for blown DC input fuses (if applicable).
- **Overload Indication:**
 - Reduce the total load connected to the inverter.
 - Disconnect and reconnect the load to reset the inverter.
- **Over Temperature Indication:**
 - Ensure adequate ventilation around the inverter.
 - Check if the cooling fan is operating.
 - Reduce the load if operating in a hot environment.

- **Low Battery Voltage Alarm/Shutdown:**

- Recharge the battery bank.
- Check battery connections for looseness or corrosion.

For persistent issues, contact COTEC customer support.


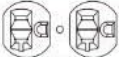




8. SPECIFICATIONS

The following table details the technical specifications for the COTEC SP2000 series, with specific values for the SP2000-224 model highlighted where applicable.

Features:

- Pure sine wave output
- Power ON / OFF remote control (Green Terminal)
- Remote controller CR-8 / CR-16 (optional)
- Input & Output fully isolation
- Temperature & Load controlled cooling fan
- Built in advance microprocessor to provide friendly interface
- Output frequency 50 / 60 Hz selectable by DIP switch
- Output voltage DIP switch selectable
- Adjustable power saving mode by variable resistor
- 3-color LED status indicators
- Input protection: Reverse Polarity (Fuse) / Under Voltage / Over Voltage
- Output protection: Short Circuit / Overload / Over Temperature
- E-13 / UL / CE / FCC approved



MODEL		SP-2000-112	SP-2000-124	SP-2000-148	SP-2000-212	SP-2000-224	SP-2000-248
Output	AC Voltage	100 / 110 / 115 / 120VAC			200 / 220 / 230 / 240VAC		
	AC Regulation	±5%			±3%		
	Rated Power	2000VA					
	Surge Power (1 Sec)	<3500VA					
	Maximum Output Power (1 Min)	>2000VA~2300VA (100%~115%)					
	Output Waveform	Pure Sine Wave (THD<5%@Normal Load <small>NOTE1</small>)			Pure Sine Wave (THD<3%@Normal Load <small>NOTE2</small>)		
	Frequency	50 / 60 Hz ±0.5%					
Input	DC Voltage	12VDC	24VDC	48VDC	12VDC	24VDC	48VDC
	Voltage Range	10.5 ~ 16.5VDC	21.0 ~ 33.0VDC	42.0 ~ 66.0VDC	10.5 ~ 16.5VDC	21.0 ~ 33.0VDC	42.0 ~ 66.0VDC
	NO Load Current	≤1.8A@12VDC	≤1.0A@24VDC	≤0.5A@48VDC	≤1.8A@12VDC	≤1.0A@24VDC	≤0.5A@48VDC
	Power Saving Mode	<0.1A@12VDC	<0.05A@24VDC	<0.05A@48VDC	<0.1A@12VDC	<0.05A@24VDC	<0.05A@48VDC
	Efficiency (Max.)	92%	93%	94%	94%	94%	95%
Protection	Input Under - Voltage Protection	10.5 ±0.3VDC	21.0 ±0.5VDC	42.0 ±1.0VDC	10.5 ±0.3VDC	21.0 ±0.5VDC	42.0 ±1.0VDC
	Input Under - Voltage Alarm	11.0 ±0.3VDC	22.0 ±0.5VDC	44.0 ±1.0VDC	11.0 ±0.3VDC	22.0 ±0.5VDC	44.0 ±1.0VDC
	Input Under - Voltage Recovery	12.5 ±0.3VDC	25.0 ±0.5VDC	50.0 ±1.0VDC	12.5 ±0.3VDC	25.0 ±0.5VDC	50.0 ±1.0VDC
	Input Over - Voltage Protection	16.5 ±0.3VDC	33.0 ±0.5VDC	66.0 ±1.0VDC	16.5 ±0.3VDC	33.0 ±0.5VDC	66.0 ±1.0VDC
	Input Over - Voltage Recovery	14.5 ±0.3VDC	29.0 ±0.5VDC	58.0 ±1.0VDC	14.5 ±0.3VDC	29.0 ±0.5VDC	58.0 ±1.0VDC
	Output Overload	Shutdown output voltage, restart to recover					
	Output Short	Shutdown output voltage, restart to recover					
	Over Temperature	Heat sink temperature over 80°C ±5°C, shutdown output voltage, recover automatically after heat sink temperature goes down to 60°C ±5°C					
	DC Input Reverse Polarity	By fuse					
	Operating Temp.	-20°C ~ +40°C					
Environment	Storage Temp.	-30°C ~ +70°C					
	Storage Temp. & Humidity	10 ~ 95% RH					
	Safety Standards	Certified UL 458 <small>NOTE3</small>			Certified EN 60950-1		
Safety & EMC	EMC Standards	Certified FCC class A			Certified EN 55022; EN 55024 EN 61000-3-2, -3-3 EN 61000-4-2, 3, 4, 5, 6, 8, 11		
	E-mark	---			Certified CISPR 25 ISO 11452-2; ISO 7637-2		
	Remote Control (Optional)	CR-8 / CR-16					
Control & Signal	LED Indicator	Input voltage level, output load level and faulty status					
	Dry Contact Terminal	By relay					
	Remote Control Terminal	6-port green terminal					
	Dimension (W x H x D)	248x83x443 mm / 9.76x3.27x17.44 inch					
Others	Packing	5.24kg; 4pcs / 21.96kg / 3.58CUFT					
	Cooling	Temperature & load controlled cooling fan					
	Application	Home and office appliances, portable power equipment, vehicle, yacht and off-grid Solar power systems ...etc.					
	Socket Type	 North America (GFCI)			 North America (NEMA 5-20RI)		
					 Continental European (SCHUKO)		
					 Australia / New Zealand		
				 United Kingdom			
				 Universal			

Note1 - Normal Condition: Vin=12.5V / 25V / 50V V_o=100 / 110 / 115 / 120 VAC 80% Full load (PF=1.0)

Note2 - Normal Condition: Vin=12.5V / 25V / 50V V_o=200 / 220 / 230 / 240 VAC 80% Full load (PF=1.0)

Note3 - UL only for GFCI receptacles

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Figure 8.1: Detailed technical specifications for the COTEK SP-2000 series, including the SP2000-224 model.

General Specifications (COTEK SP2000-224)

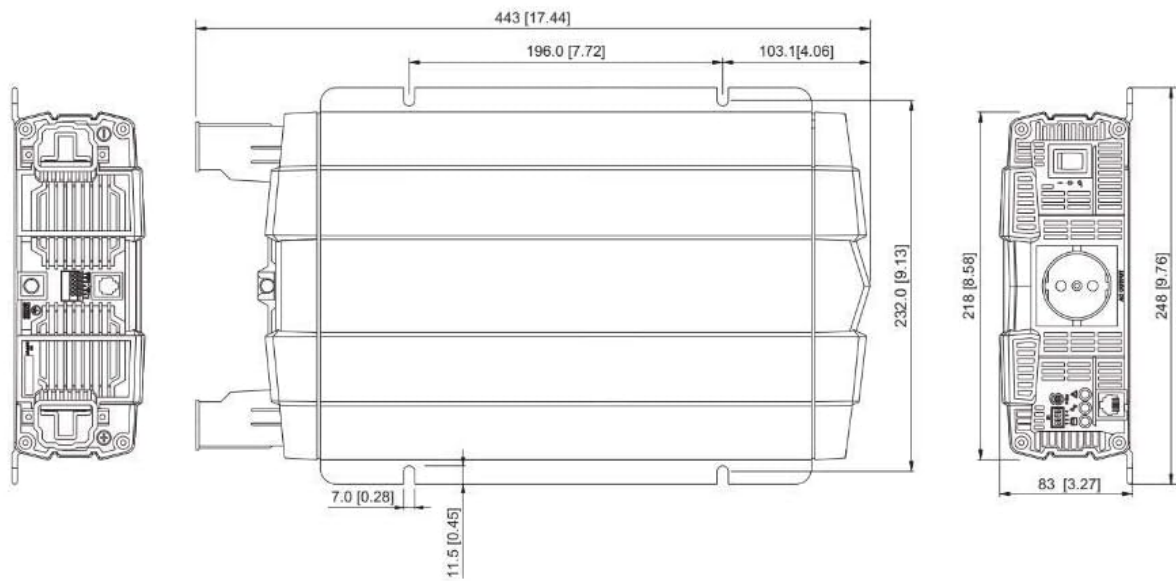
Feature	Specification
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Feature	Specification
Brand	COTEK
Model Name	SP2000 (SP2000-224 variant)
Rated Power	2000W
Surge Power (1 Sec)	4000W
DC Input Voltage	24VDC (Operating Range: 21.0-33.0VDC)
AC Output Voltage	230VAC (selectable)
Output Frequency	50/60 Hz (selectable)
Output Waveform	Pure Sine Wave (THD<3% at nominal load)
Efficiency (Max)	93%
Cooling	Temperature & load controlled fan
Operating Temperature	-20°C to +40°C
Storage Temperature	-30°C to +70°C
Dimensions (W x H x D)	17.44 x 9.76 x 3.27 inches (443 x 248 x 83 mm)
Item Weight	1 pounds (approximate, actual unit weight may vary)
Package Dimensions	19 x 12 x 6 inches
Certifications	E13, UL, CE, FCC approved

8.1 Mechanical Drawings

For detailed physical dimensions and mounting information, refer to the mechanical drawings below.

■ Mechanical Drawings:



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Figure 8.2: Mechanical drawings providing precise dimensions for installation planning.

9. WARRANTY AND SUPPORT

COTEK products are designed for reliability and performance. For warranty information, technical support, or

service inquiries, please refer to the warranty card included with your product or visit the official COTEC website. Keep your purchase receipt as proof of purchase for warranty claims.

Related Documents - SP2000-224

	<p>COTEC SE Series Pure Sine Wave Inverter User Manual (200W, 350W, 400W)</p> <p>Comprehensive user manual for the COTEC SE Series Pure Sine Wave Inverters, covering models 200W, 350W, and 400W. This guide provides detailed information on safety precautions, product features, electrical specifications, installation procedures, operation, maintenance, troubleshooting, and warranty details.</p>
<p>SK120,SK200,SK350 Series Pure Sine Wave Inverter User's Manual</p>	<p>COTEC SK120, SK200, SK350 Series Pure Sine Wave Inverter User Manual</p> <p>This user manual provides detailed information on the COTEC SK120, SK200, and SK350 series pure sine wave inverters, covering safety, features, installation, operation, troubleshooting, and warranty.</p>
<p> SK Series Pure Sine Wave Inverter User's Manual</p>	<p>COTEC SK Series Pure Sine Wave Inverter User Manual</p> <p>Comprehensive user manual for the COTEC SK Series Pure Sine Wave Inverter, covering safety, features, specifications, installation, operation, troubleshooting, and warranty.</p>
<p> SK Series Pure Sine Wave Inverter User's Manual</p>	<p>COTEC SK Series Pure Sine Wave Inverter User's Manual</p> <p>Comprehensive user's manual for the COTEC SK Series Pure Sine Wave Inverters, covering safety instructions, features, specifications, installation, operation, troubleshooting, and warranty information.</p>
	<p>COTEC SR-1600 PLUS Rack Mount Pure Sine Wave Inverter: Quick Introduction</p> <p>A concise overview of the COTEC SR-1600 PLUS series rack-mount pure sine wave inverters, detailing specifications, product appearance, installation, and warranty information.</p>



[COTEK SPT Series Pure Sine Wave Inverter with Transfer Switch - Product Introduction and Specifications](#)

A concise overview of the COTEK SPT Series Pure Sine Wave Inverters with Transfer Switch, detailing their technical specifications, product appearance, installation guidelines, and warranty information for various models.