MORNINGSTAR corporation

SureSine™

PURE SINE WAVE INVERTER

The ***SureSine*** inverter has been developed using Morningstar's power electronics expertise and 25 years of experience with remote off-grid photovoltaic (PV) systems. This product is a pure sine wave inverter designed specifically to meet the needs of rural PV electrification requiring AC power including solar home systems, schools, community centers and health clinics. This inverter is also a good choice for small PV systems for telecom, remote cabins and weekend homes, and RV/caravans and boats.

The SureSine's combination of performance, features and competitive price provides the best small inverter value on the market. It is highly reliable, having no internal cooling fan or other moving parts prone to failure.

Key Features and Benefits:

Improved Load Operation

Pure Sine Wave – *Provides quality AC equivalent to grid power. A sine wave will extend the life of the household appliances (lights, TV, fans) and improve load performance.*

Toroidal transformer design – *Generates good wave form throughout the range of input voltages.*

Outstanding Surge Capability – *Handles a 200% surge during load start-up, to a maximum of 600 watts.*

More Power Available

High Efficiency – *A high peak efficiency will reduce heating and make more solar energy available for powering loads.*

Low Self-Consumption – *The SureSine consumes 450mA while powering loads. During no load conditions, solar energy is not wasted because the SureSine automatically powers down to stand-by mode, reducing self-consumption to one tenth of operating consumption.*

Extremely High Reliability

Extensive Electronic Protections – *The SureSine has extensive electronic protections that will automatically protect against faults and user mistakes such as short circuit, overload, high temperature and low voltage disconnect. Recovery from most faults is automatic.*

No Internal Cooling Fan – *A key design objective since fans often fail in harsh environments and are noisy, consume power and blow dirt into the electronics.*

Tropicalization – *The SureSine uses epoxy encapsulation, conformal coating, stainless steel hardware, and an anodized aluminum enclosure to protect against harsh tropical and marine environments.*

Other Features

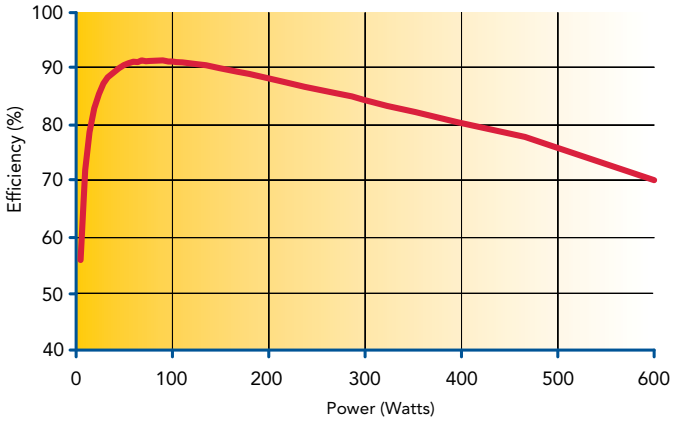
More Information – *The two LEDs provide important information to the user about system status and any fault conditions. An optional digital meter may be connected to the SureSine to display additional system information.*

Remote On/Off – *Improves safety by making it easy to install the SureSine in an inaccessible location or enclosure. Reduces system cost by avoiding the need to add an AC safety disconnect to the system.*

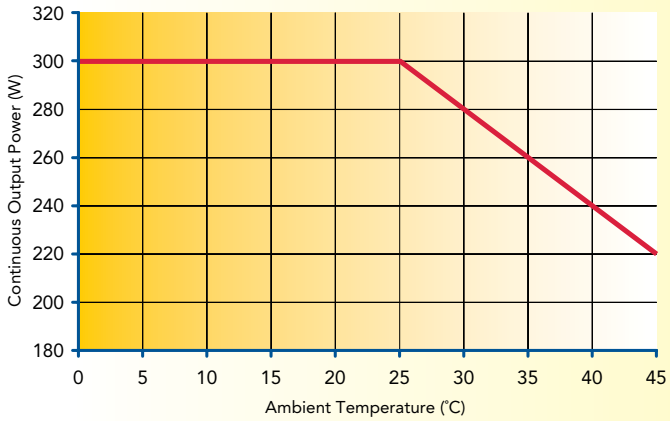
Adjustability – *Four DIP switches provide easy adjustability of several system parameters. Additional adjustability is possible via RJ-11 to RS-232 adapter to a personal computer and using Morningstar's PC software.*

SURESINE™ PURE SINE WAVE INVERTER

Inverter Efficiency



Temperature De-Rate Curve



TECHNICAL SPECIFICATIONS

Electrical Specifications

• **Continuous Power Rating**	300 Watts @ 25°C
• **Peak Power Rating (10 minutes)**	600 Watts @ 25°C
• **DC Input Voltage**	10.0V – 15.5V
• **Waveform**	Pure sine wave
• **AC Output Voltage (RMS)***	220V or 115V +/– 10%
• **AC Output Frequency***	50 or 60 Hz +/– 0.1%
• **Peak Efficiency**	92%
• **Total Harmonic Distortion (THD)**	< 4%
• **Self Consumption**	
Inverter On (no load)	450mA
Inverter Off	25mA
Stand-by	55mA
• **Low Voltage Disconnect (LVD)**	11.5 V or 10.5 V**
• **Low Voltage Reconnect**	12.6 V or 11.6 V**
• **LVD Warning Threshold (buzzer)**	11.8 V or 10.8 V**
• **LVD Delay Period**	4 minutes
• **High Voltage Disconnect**	15.5 V
• **High Voltage Reconnect**	14.5 V
• **Standby On Threshold**	~ 8 Watts
• **Standby Off Threshold**	~ 8 Watts
• **High Temperature Disconnect**	95°C (heatsink)
• **High Temperature Reconnect**	80°C (heatsink)

Two separate versions available:
220VAC at 50 Hz or 115VAC at 60 Hz
Other output voltages available upon request.

****User selectable on both versions.***

Electronic Protections

- **Reverse Polarity (fused)**
- **AC Short Circuit**
- **AC Overload**
- **High Voltage Disconnect**
- **Low Battery Disconnect**
- **High Temperature Disconnect**

Mechanical Specifications

• **Dimensions**	213 x 152 x 105 mm 8.4 x 6.0 x 4.1 in
• **Weight**	4.5 Kg / 10.0 lbs
• **AC Terminals**	
Max. Wire Size	4 mm^2 / 12 AWG
• **DC Terminals**	
Max. Wire Size	2.5 to 35 mm^2 14 to 2 AWG
• **Remote On/Off Terminals**	
Max. Wire Size	0.25 to 1.0 mm^2 24 to 16 AWG
• **Enclosure**	IP20 Cast anodized aluminum

Environmental Specifications

• **Ambient Operating Temp**	–40°C to +45°C
• **Storage Temperature**	–55°C to +85°C
• **Humidity**	100% (non-condensing)
• **Tropicalization**	Conformal coating on printed circuit boards Epoxy encapsulated transformer and inductors

Certifications

- **CE Compliant**
- **UL Listed (UL 458)** – 115 V version ONLY
- **cUL (CSA C22.2 No. 107.1-01)** – 115 V version ONLY

WARRANTY: ***Two year warranty period. Contact Morningstar or your authorized distributor for complete terms.***

AUTHORIZED MORNINGSTAR DISTRIBUTOR:

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