

HEART TRANSVERTER

MAKING ADVANCED POWER ELECTRONICS FOR SUSTAINABLE ENERGY

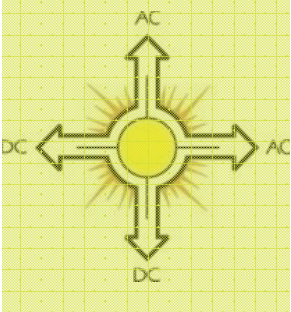
The Heart Transverter simultaneously addresses the Alternative Energy, Mobile Power, UPS (uninterruptible power supplies for computers) and Battery Testing markets. It not only addresses all of them with one product, but it integrates all of them and provides the working ingredients for energy intelligence and distributed system control and analysis.

The new Transverter technology could be the major element integrating renewable and sustainable energy with the modernization of the grid. The key element here is that they can implement massive changes quickly within existing budgets.



- Real time data acquisition** Each Transverter power module provides separate readings for RMS AC volts in, RMS AC volts out, AC power in, AC power out, RMS AC current in, RMS AC current out, Power Factor in, Power Factor out, frequency in, frequency out. It also provides detailed readings for each of the DC ports for volts, amps and a wealth of more detailed information like temperatures from 2 locations, fan speed, internal bus voltages, pulse widths and many other detailed values. This includes capacity and state of charge of batteries and real output of solar panels or wind generators. It also provides complete oscilloscope functions for AC wave shapes for AC volts in & out, AC current in & out and power in & out. From this you can derive harmonic content and a wealth of other detailed information.
- Detailed data logging** The Transverter system stores up to 14,000 complete sets of information that could be taken anywhere from every second to every 16 minutes. This way, even after some event has happened, the grid can look at complete detail of what happened building up to the event, even for days and weeks before the event happened. This data logging is automatic in the Transverter and is stored in flash so that it will not be lost, even if the system is shut down or even destroyed. It is like the flight recorder on a commercial airline.
- More nodes** The typical Transverter installation will have between 2 and 12 power modules and these can be connected to different loads and devices in the system. As a general rule, each installation would have only one smart power meter, so the Transverter will provide more nodes of information (as many as 12 times).
- Automatic power factor compensation** The Transverter not only provides power factor information on the loads but it corrects them so that what the grid sees is always unity power factor. This is of tremendous value to the grid as it affects its maximum ability to power loads both for the electrical infrastructure and for the power plants. With the big push to move to compact florescent lights few people notice that they have a power factor of only .5 and will degrade both the infrastructure and the power plant capacity by 50%. The Transverter totally removes this problem.
- Automatic Surge Assist** The Transverter systems can borrow energy from their battery systems and loan it to the grid for a few seconds to help it provide the surge power required to start large inductive motors. This surge power is what dictates wire size and transformer size and wide spread use of the Transverter could cut the required wire size in half. This can have a major impact on implementing new infrastructure as well as supporting over-taxed, failing, infrastructures. Since this surge assist is applied locally, it doesn't require the infrastructure to bear the burden of the surge.
- Renewable Energy Control** Whenever solar or wind power connected to the grid becomes significant it can create catastrophic stability problems. Clouds come and go, the wind dies and gusts and the grid must integrate this with enormous power plants. The Transverter, when used as the grid tie inverter for solar or wind, can communicate with the grid and the grid can tell it to stop sending solar and the Transverters will all stop injecting solar into the grid within a fraction of a second, giving the grid the control they need to eliminate the stability issue.
- Real time selective load shedding** The Transverter can break things up into blocks as small as 2,000 watts. These can be individually controlled so that the grid could be given control to, again, increase its stability and its ability to respond to large surges in loads, and to time things to fit in with peak load demand. In the future, the Transverter will have an accessory which is like a smart breaker panel and this could give the grid control of every breaker in the building. This will be integrated into all of the communication, data acquisition and data logging already built into the Transverter.

In short, the Transverter will give the grid massively more detailed information in both real time and in data logged mode and will give the grid more detailed control of both loads and of renewable energy sources. What is more, it will do it all for free because it is all imbedded into equipment that needs to be purchased anyway.



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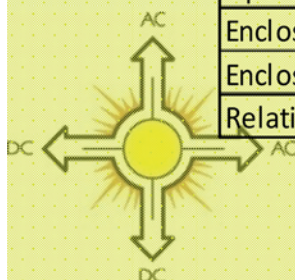
UNIT SPECIFICATIONS

MODEL: HT2000

| Electrical Specifications | |
|---|-------------------------------|
| Nominal AC Power Output | 2000W |
| Maximum AC Power Output | 2200W |
| AC Voltage (nominal) | 117 VAC |
| AC Frequency (nominal) | 60 Hz |
| DC Input Voltage Range | 10-48 VDC |
| Peak Inverter Efficiency (incl transformer) | 93% |
| Maximum Continuous Output Current | Programmable up to 17 Amps AC |
| Over Current Protection | 19 Amps AC |
| Own Consumptions with no loads | 8 W |
| Line power factor | 0.97 |
| Min DC voltage for feed-in | 10 VDC |

| Efficiency as Utility Interactive Inverter With Battery Backup (12V - 36 V Nominal) | | |
|---|--------|--------|
| | CEC | EUR |
| 2000W @ 35.7 VDC, peak efficiency 92.2% at 800 W | 90.50% | 90.20% |
| 10 SOLARWORLD 175W panels 1750 W @ 35.7 VDC, peak efficiency 92.2% at 800 W | 90.80% | 90.20% |
| 36 VOLT BATTERIES 2000 W at 37.5 VDC, peak efficiency 92.2% at 800 W | 90.50% | 90.20% |
| 25 VOLT BATTERIES 2000 W at 25 VDC, peak efficiency 91.7% at 800 W | 89.80% | 89.60% |

| General Specifications | |
|--------------------------------|------------------------|
| Operating Temperature Range | 0-75 deg C |
| Enclosure environmental rating | Indoor Equipment |
| Enclosure | Powder-coated aluminum |
| Relative humidity | 80% Non condensing |

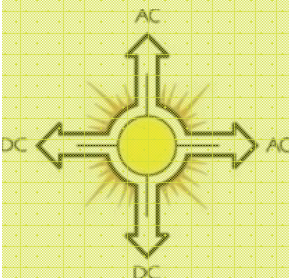


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UNIT SPECIFICATIONS (CONT')

| Features and Options | |
|--|---|
| Cooling Convection (no fan required) / Cooling Method Temperature-dependent forced air cooling | |
| 2 Display Backlit, two line per display, 20 character Liquid Crystal Display | |
| Warranty 2 year parts and labor | |
| Protective functions AC over/under voltage, AC over/under frequency, | |
| Ground-fault protection DC isolation monitoring | |
| Transformer HF transformer | |
| Installation / Mounting Prepared for wall mounting | |
| Output relays Four relay contacts (three user-settable) | |
| Interfaces USB 2.0 | |
| Remote System Monitoring | |
| Data acquisition & logging Adjustable | |
| Inputs/Outputs Interfase | |
| DC Inputs/Outputs | 8 mm Studs Stainless Steel (All 5 connections) |
| AC Input/Output | Terminal block from connections of 3 Wires 10-8 AWG |
| Packing Information | |
| Box Size (H X W X D in inches) | 11" X 14.5" X 21" |
| Box Weight (HT2000 Inside) | 33.28 lb (15.1 kg) |
| Units Per Pallet (48" X 40") | 24 units (3 layers of boxes) |
| Full Pallet Weight (including pallet weight) | 845 lb (383.22 kg) |

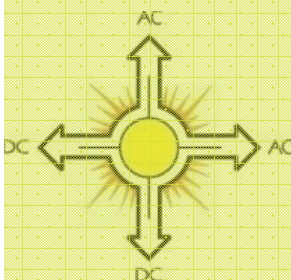
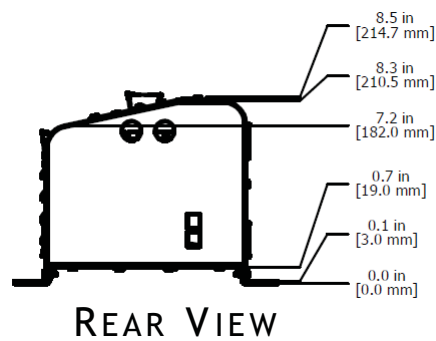
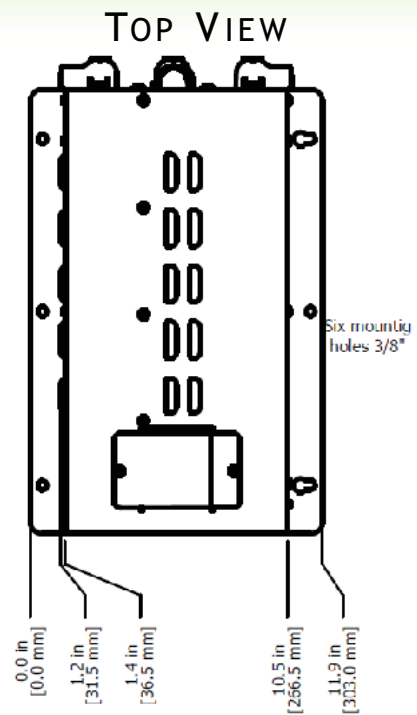
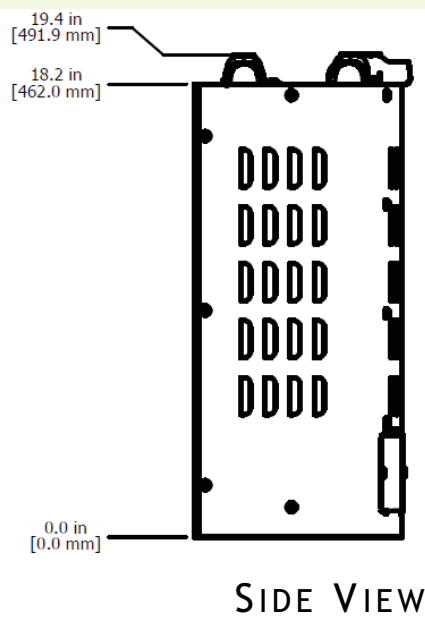


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MECHANICAL INFORMATION

BASIC VIEWS

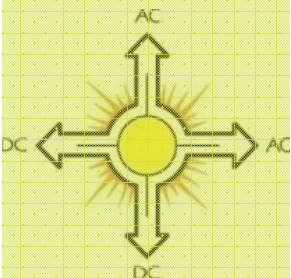
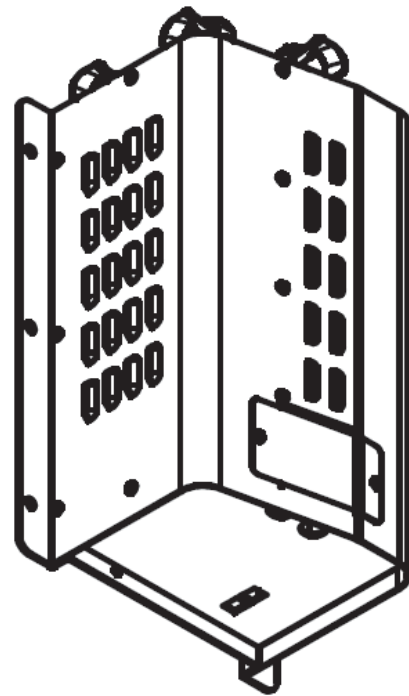
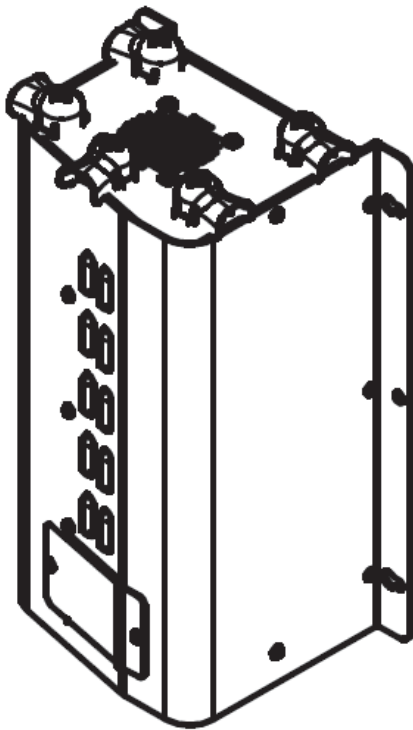


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MECHANICAL INFORMATION ('CONT)

ALTERNATE VIEWS



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