



TSW4048 4000VA 48VDC



OFF-GRID TRUE SINE WAVE SPLIT PHASE, STACKABLE INVERTER/CHARGER

The TSW TrueSineWave™ Inverter / Charger

The Apollo Solar TSW4048 includes a DC to AC true sine wave inverter, battery charger, and AC transfer switch in a compact modular housing. Providing 4000VA at 48V, the TSW is the ideal solution for residential and commercial off-grid PV systems in the 2kW-32kW range. The TSW now also provides a superior inverter/charger for any home/business UPS or battery backup system.

Specified by Installers, Required by End-Users

The TSW4048 provides the technical capabilities specified by PV installers, distributors, and dealers to meet the requirements of end-users of battery-based PV power systems. The result is a single box that provides 120 and 240 volt AC power at 60Hz as well as 230 VAC at 50Hz. With a compact footprint and modest weight, the Apollo Solar TSW Inverter also provides ease of installation in tight spaces.

120/240 Volt AC Split-Phase Operation

No external transformers are required for step-up, step-down, or balancing, saving added costs, installation time, and several points of efficiency. The output provides 240 volts for well pumps, appliances, or shop tools while providing 120 volts for standard circuits. The loads can be unbalanced by up to 75% without problems.

200% Surge Power Capacity, Starts a 3HP Motor

Over 200% of the rated power is available to allow for intermittent loads for short periods, like starting a 3HP motor, without interrupting sensitive computer loads.

Stacking of Multiple Inverters

The TSW Inverters work seamlessly in parallel to provide additional output current. Systems up to 32kVA are in field operation. The load sharing is smart to keep all TSWs running at the most efficient output. The TSWs can provide 3-phase power up to 15kVA using 3 units.

Efficient Multi-stage Battery Charging

Power factor corrected, the high-current battery-charging circuit optimizes the efficient use of energy from generator or line input. The 5-stage charging algorithm-- Bulk, Absorb, Float, Equalize, Standby--- maximizes both battery life and storage capacity.

Advanced Apollo Solar Data Communications

The ASNET port provides networking capability of multiple units and access to the T80/T80HV MPPT Turbocharger Controllers, with monitoring of energy used, battery state-of-charge, and system performance all included. Remote system monitoring on a local Ethernet and/or on the Internet is provided via the Apollo Solar Communications Gateway and even from sites lacking telephone landline via the Apollo Solar GSM Modem.

True Sine Wave Output

**120/240 VAC Split-phase Operation
or 120 VAC at Twice the Current
or 230VAC 50Hz from the same unit**

200% Surge Power Capacity

Stacking of Multiple Inverters

- **Up to 32kVA in parallel**
- **3-phase up to 15kVA**

**High Current 5-stage Charging for
Maximum Battery Life & Storage**

Perfect for UPS / Battery Backup

2-Line LCD Shows Major Parameters

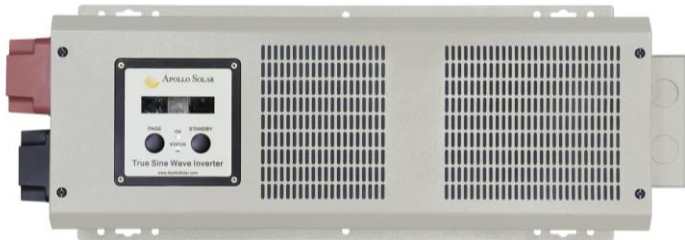
Ethernet/Remote Internet Monitoring

TSW4048 SPECIFICATIONS

Continuous Power Rating 25°C	4000 VA
Nominal DC Battery Input Voltage	48 VDC
Battery input current at rated power	92 amps
Nominal AC Output Voltage	Selectable 120/240 VAC Split Phase, 120VAC single phase at 2X current or 230VAC single phase
Surge Power Peak (1ms)	120VAC: 80A, 240VAC: 41A
Surge Power RMS (100ms)	120VAC: 52A, 240VAC: 37A
Overload Capacity from 25°C start	
7 Seconds:	8000 VA 200%
30 Seconds:	6000 VA 150%
30 Minutes:	4600 VA 115%
Max Continuous AC RMS Amps Output at 25°C	120VAC: 30A, 240VAC: 15A
Full on, No load power consumption	< 35 Watts
Search mode power consumption	~ 4.5 Watts
Inverter Efficiency (Peak)	94%
Total Harmonic Distortion	Typical: 3.5%, Maximum: 5% (True Sine Wave)
Output Voltage Regulation	+/- 3%
AC Output Frequency	50 or 60Hz +/- 1% (Switch Selectable)
AC Input Frequency Range for Charge Mode	46 to 55Hz at 50 Hz, 55 to 65Hz at 60Hz Nominal
AC Input Voltage Range for Charge Mode	L-N 80-150VAC for 120VAC, L-L: 160-270VAC for 240VAC
AC Input Maximum Current	120VAC: 40A, 240VAC: 16A
DC Input Range	42 to 70 VDC
Continuous Battery Charger Output at 25°C	70 amps DC
Five Stage Battery Charger Output	Bulk, Absorb, Float, Equalize, & Standby
Battery Charging Power Factor Corrected	>0.92
Battery Charge temperature compensation	External temperature sensor provided – rate adjustable 2 to 8mv/°C/cell
Battery Temperature Safety	Automatic Charger Shut Off if battery temperature is over a preset limit
Transfer relay capability	40 amps per leg; 8 to 16 ms transfer time
Operating Temperature Range	-20°C to +45°C
Over-temperature Protection	Sensors on MOSFETs, Transformer and Battery
Certification	UL 1741, CSA C22.2 No.107.1-01
Warranty	5-year Limited Warranty
Weight	22.23kg, 49lbs. (25.4kg, 56 lbs shipping weight)
Size	572x229x184mm, 22.5"x9"x7.25" (686x330x305mm, 27"x13"x12" box size)
Enclosure	Powder-coated steel
Cooling	Variable speed, Temperature controlled fans
Data Communication	ASNET (RS-485) and CANBUS

OPTIONAL ACCESSORIES

Inverter Switchgear Module	Optional Switchgear Module includes all the DC and AC circuit breakers required
Charge Controllers	Apollo Solar T80 and T80HV TurboChargers provide optimum charging from PV arrays
Ethernet / Internet Monitoring	Optional Communication Gateway provides full data monitoring from any computer



LCD reads out in either vertical or horizontal installation. The display is easily rotated.



APOLLO SOLAR

23 Francis J. Clarke Circle
Bethel, CT 06801
(203) 790-6400
www.ApolloSolar.com