



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

## TSW3224



### The TSW TrueSineWave™ Inverter / Charger

The Apollo Solar TSW3224 includes a DC to AC true sine wave inverter, battery charger, and AC transfer switch in a compact modular housing. Providing 3200W at 24V, the TSW is the ideal solution for residential and commercial off-grid systems in the 2kW-12kW range.

### Specified by Installers, Required by End-Users

The TSW3224 meets specifications provided by installers, distributors, and dealers and required by 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 Input and Output

No external transformers are required for step-up, step-down, or balancing, thus, 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. 75% unbalanced loads are handled as well. The input can accept the line or 240 volt AC generators. The output can be wired for single 230/240VAC output or for single 120VAC output at twice the current. The option to select 230VAC or 240VAC and to select 50Hz or 60Hz is provided by easily accessible internal jumpers.

### 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.

### Parallel Stacking of Multiple Inverters

The TSW Inverters can be wired in parallel to provide additional output current.

### 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 maximizes both battery life and storage capacity.

### Advanced Apollo Solar Data Communications

Monitoring of energy used, battery state-of-charge, and system performance is included. The ASNET port provides networking capability of multiple units, access to the T80/T80HV MPPT Turbocharger Controllers. 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

200% Surge Power Capacity

Parallel Stacking of Multiple Inverters

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

Peak Efficiency 93%

2 Line LCD Shows Major Parameters

Optional Network Communications

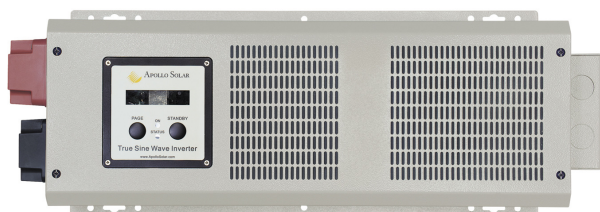
- Remote Internet Monitoring
- Ethernet to Local Computers

## SPECIFICATIONS

|   |  |
|---|--|
| Continuous Power Rating 25°C              | 3200 VA  |
| Nominal DC Battery Input Voltage          | 24 VDC   |
| Battery input current at rated power      | 148 amps   |
| Nominal AC Output Voltage                 | Selectable 120/240 VAC Split Phase, 120VAC single phase 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:                                | 6400 VA 200%   |
| 30 Seconds:                               | 4800 VA 150%   |
| 30 Minutes:                               | 3840 VA 120%   |
| Max Continuous AC RMS Amps Output at 25°C | 120VAC: 26A, 240VAC: 13A   |
| Full on, No load power consumption        | < 29 Watts   |
| Search mode power consumption             | ~ 4.5 Watts  |
| Inverter Efficiency (Peak)                | 93%  |
| 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: 26A, 240VAC: 13A   |
| DC Input Range                            | 21 to 35 VDC   |
| Continuous Battery Charger Output at 25°C | 100 amps DC  |
| Five Stage Battery Charger Output         | Bulk, Absorb, Float, Equalize, & Standby                                       |
| Battery Charging Power Factor Corrected   | >0.92  |
| Battery Charge temperature compensation   | With external temperature sensor   |
| 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  |
| Warranty                                  | 5 Years  |
| Weight                                    | 22.23kg, 49lbs. (25.4kg, 56 lbs shipping weight)                               |
| Size                                      | 572x229x184mm, 22.5"x9"x7.25"<br>(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.



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