



## **T80HV TURBOCHARGER™**



**Wire the PV modules in series up to  
200 Voc max 160 volts nominal**

**80 Amps continuous output at up to  
45°C / 113°F ambient temperature**

**Free Battery Energy Monitor Built In**

**Wired or Wireless Remote Displays**

**One-minute set-up with fail-safe  
calculated defaults**

**Patent Pending MPPT Provides  
Best Energy Harvest Available**

**Easy stacking of up to 16 T80HV's  
in parallel for higher currents**

**Precision charging of 12/24/36/48V  
batteries using voltage sense wires**

## **HIGH VOLTAGE INPUT, 80 AMP MPPT BATTERY CHARGE MANAGEMENT SYSTEM**

### **200 Volt maximum PV open circuit voltage**

The T80HV is the only MPPT charge controller that works with the newer higher voltage PV modules. Specifically, the Sanyo HIT 200 modules have Vmp of 51.75v at 50°C which will not charge a 48 volt battery, but they generate up to 79.88 volts open circuit at -40°C. Two of these modules in a series string will generate 103 volts at Vmp, but the Voc is almost 160 volts which will destroy all the 140/150 volt charge controllers. The T80HV is designed to operate up to 200 Voc and 160 Vmp and works with the Sanyo HITs.

### **FREE Energy Monitor Built In**

The T80HV includes a built-in Energy Monitor using TriMetric™ Technology from Bogart Engineering. The monitor tracks power production and consumption to calculate the energy remaining in the battery. State-of-Charge (SOC) is displayed in Percent Full, Amp-hours, Watt-Hours, and Bar-Graph format. In addition, 90 days of energy-harvest history is stored in the T80HV.

### **Power and Control in a Single Device**

The T80HV *TurboCharger™* integrates Maximum Power Point Tracking, battery charge management, state-of-charge information, and communications into a single device.

### **Integral Performance-and-Update Communications**

The slot for optional add-in cards provides data communication to Wireless Remote Displays, PCs and the Internet. System performance can be monitored remotely and the T80HV accepts software upgrades using a PC and the Remote Display SD Card.

### **Continuous Power Rating Up to 45°C/113°F Ambient**

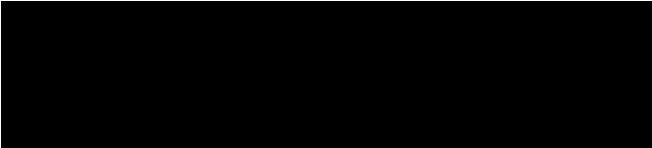
The T80HV *TurboCharger™* produces full-rated power without de-rating at up to 45°C ambient temperature. Above that temperature, the output current is reduced gradually to protect the life of the T80HV and then automatically ramped up as the temperature decreases. High-efficiency power circuits and robust thermal design minimize heat generation. The internal temperature-controlled variable speed fan runs just fast enough to maintain optimum reliability.

### **Optimum MPPT/Charging Efficiency Cuts Costs**

The T80HV captures up to 35% more power from the photovoltaic (PV) array with patent-pending MPPT technology. The Apollo MPPT algorithm starts early and locks onto the peak power during rapidly changing insolation and temperature. The T80HV dramatically cuts the cost of a PV system by reducing the number of PV panels required, eliminating the need for heavy gauge wiring, and increasing the life of the storage batteries.

# **T80HV TurboCharger™ SPECIFICATIONS**

Maximum output current .....	80 Amps continuous at up to 45°C/113°F ambient temperature
Battery voltages .....	12, 24, 36, or 48 VDC nominal
Max PV input current .....	70 Amps
Input voltage range .....	16 to 160 VDC operating 200VDC Maximum Open Circuit Voltage
Max PV array power .....	5200W for 48v batteries, 3200W for 24v batteries, 1600W for 12v batteries
Charge regulation modes .....	Bulk, Absorption, Float, Standby, Auto Equalization, and Manual Equalization
MPPT Features .....	Apollo Solar patent-pending MPPT algorithm harvests the optimum power under all conditions of clouds or temperature.
Battery temperature compensation...	6.0mV per °C per 2 volt cell
DC to DC conversion capability ....	Charge 48v batteries from 68 to 160* volt PV arrays Charge 36v batteries from 51 to 160* volt PV arrays Charge 24v batteries from 34 to 160* volt PV arrays Charge 12v batteries from 17 to 80 volt PV arrays – not recommended to charge 12v batteries from over 80 volts of PV for efficiency reasons. *Check max Voc from PV modules at low temperature extremes.
Display .....	Built-in 4-line 20-character LCD with back light
Status reporting .....	LCD status screen displays Input voltage and current, Output voltage and current, Charge-mode, and Battery State-Of-Charge (SOC).
Data logging .....	Logs energy harvested for 90 days. LCD displays Watt-hours, kW-hours, Amp hours, and hours each day that Float mode is active.
Energy Monitor .....	LCD shows SOC (State-of-Charge) in a fuel gauge style bar graph as well as % Full, Amp-hours, Watt-hrs and present charge or discharge current. A 50mV/500Amp shunt is required to use the Energy Monitor features.
Auxiliary relays .....	Two independent relays with form A (SPST) contacts for control of external devices. Configurable as NO or NC. Contact rating ½ Amp, 50 VDC.
Operating Temperature .....	Full power output to +45°C ambient Output current automatically ramped and de-rating down above 45°C and softly restored as temperature decreases.
Standby Power .....	Less than 2 Watts
Data Communication Options .....	Card slot for optional Apollo Network and Wireless link to Remote Display.
Connectors .....	Power lugs accept 14 to 1/0. No. 2 wire recommended.
Conduit knockouts .....	One 1" or 1-¼" and one ½" or ¾" on left side. Two ½" or ¾" on back. Two 1" or 1-¼" on bottom. Bottom holes line up with power connectors.
Unit dimensions .....	38.7cm X 21.6cm X 11.1cm (15.2" X 8.5" X 4.4") Length X Width X Depth
Shipping dimensions .....	53cm X 31.8cm X 21.6cm (21" X 12 ½" X 8 ½")
Weight .....	Unit: 7.3 kg/16 lbs Shipping weight: 10 kg/22 lbs
Certification .....	UL1741, CSA C22.2 No. 107.1
Environmental rating .....	Indoor Type 1 (Not intended for outdoor mounting)
Included Accessory Kit .....	Apollo Shunt Board and cable, battery monitor cable, and Battery Temp Sensor
Optional Accessories .....	True Sine Wave Inverter / Chargers TSW2212, TSW3224, TSW3648 Solar Power Center enclosure with DC and AC breakers & System Monitor



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