



# APOLLO SOLAR

## T80 TurboCharger™



## **80 AMP MPPT BATTERY CHARGE MANAGEMENT SYSTEM**

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

The T80 TurboCharger™ integrates Maximum Power Point Tracking, battery charge management, state of charge information and communications into a single device. With 80 Amps continuous output, the T80 can handle 5120 watts of PV on 48 volt battery systems.

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

The T80 TurboCharger™ produces full-rated power without de-rating at up to 45°C ambient temperature. Above that, the output current is reduced gradually to protect the life of the T80 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 constant temperature for optimum reliability.

### **Energy Monitor Built In**

The T80 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 T80.

### **Enhanced Battery Performance and Life**

The T80 supports Flooded Lead Acid (FLA), GEL and Absorbed Glass Mat (AGM) lead-acid batteries as well as Lithium-Ion, Nickel-Cadmium and Nickel-Iron. Four-stage charging with adjustable set points for all parameters. Manual and automatic equalization.

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

The T80 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 T80 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.

### **Integral System Monitoring Communications**

The slot for optional add-in cards provides data communication to Remote Displays, PCs and the Internet. System performance can be monitored remotely and the T80 accepts software upgrades using a PC and the Remote Display's SD Memory Card.

**80 Amps continuous output at up to 45°C / 113°F ambient temperature, Operating temp: -40 °C to +60 °C**

### **Built-in Battery Energy Monitor**

**Our proven MPPT provides the best Energy Harvest available**

**Wire the PV modules in series up to 112 volts Vmp or 140 Voc max**

**Parallel T80's for more charge current: Stack Up to 16 units for 1280 Amps**

**Precision charging of 12/24/36/48V batteries with one-minute set-up and Fail-safe calculated defaults**

**Remote Display & Internet Monitoring**

# T80 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
Maximum PV input voltage (Voc) ...	140VDC Maximum Open Circuit Voltage (Voc), 112VDC Max Operating (Vmp)
Minimum PV input voltage (Vmp) ...	PV Vmp must be at least 16% greater than the highest battery charge voltage set point. For 12 volt batteries this is typically 18.56VDC, for 24v batteries typically 37.12VDC, and for 48v batteries it is typically 74.24VDC. The input voltage is measured at the input of the T80 after the wiring and the PV array temperature must be considered with Vmp.
Max PV array power .....	5120 Watts (maximum when equalizing a 48v battery to 64v at 80 Amps) 2560 Watts for equalizing a 24 volt battery and 1280 watts for eq a 12 volt battery
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
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 .....	-40°C to +60°C, Full power output to +45°C ambient, Output current automatically ramped down above 45°C: 1Amp per 1°C increase in temperature and then softly restored as temperature decreases.
Standby Power .....	Less than 2 Watts
Data Communication Options .....	Card slot for optional Apollo Network and link to Remote Display and Internet Gateway.
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
Warranty .....	5-year Limited Warranty
Environmental.....	Ambient Temperature: -40°C to +60°C; Storage Temperature: -55°C to +100°C; Humidity: 100% non-condensing; Enclosure: Indoor Type 1
Included Accessory Kit .....	Apollo Shunt Board and cable to T80, battery voltage monitor cable, and Battery Temperature Sensor (as shown in photo)
Optional Accessories .....	True Sine Wave, Split-Phase Inverter/Chargers TSW3224, TSW4048; Inverter Switchgear Module (ISM) enclosure with DC and AC breakers, Pre-Wired Panels (PWP) which included a T80, TSW and ISM factory wired and tested, Communications Gateway with optional GSM modem for Remote Monitoring via local ethernet or via Internet



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