



# TP-SC24-20-MPPT

## DATA SHEET

### MPPT Solar Charge Controller

#### Features

- MPPT Temperature Compensated Charging
- Fully Automatic Operation
- LCD Displays: Battery Volts, Battery Temp, Battery Level, Load Current and Solar Current
- Autoranging 12V or 24V Battery Arrays
- Multimode Load Operation – 5 selectable modes
- Soft Start Load Output to Power High Capacitive Loads
- Automatic 30day Battery Equalization
- Conformal Coated Electronics for Environmental Protection
- TVS lightning protection, Industrial Temperature Range
- Low self consumption <1W



#### Applications

- Remote Power Systems
- Solar Lighting
- Solar Power Applications

#### Description

The Tycon Solar™ TP-SC24-20-MPPT solar controllers are MPPT (Maximum Power Point Tracking) temperature compensated battery charging controllers. The battery temperature probe cable is included. The controllers are auto-ranging to accommodate 12V and 24V battery systems. They are designed to charge Flooded, AGM, GEL or Lithium batteries. They also have a USER setting for customizable battery charge settings. They have an integral LCD display that shows Battery Voltage, Battery Capacity, Charging Capacity, Battery Temperature, Load Current and Solar Current.

There is an RS232 interface to connect to the Tycon #TP-SC-BT1 Bluetooth adapter (not included). Using this configuration and the available Android or IOS mobile app, the solar controller can be monitored and controlled from a distance.

They have multiple load operating modes which can be set through the buttons on the controller.

1. Pure Light Control (0): When sunlight disappears and the solar input voltage drops below the set point, the controller initiates a one minute delay, and then turns on the load output. When sunlight returns and the solar input voltage exceeds the set point, the controller initiates a one minute delay, and then turns off the load output.
2. Light Control + Time Control (1 to 14): The starting process is the same as pure light control. After operating for a preset period of time (settable from 1 to 14 hours), the load turns off automatically.
3. Manual Mode (15): In this mode, the user can switch the load on or off by the key, no matter whether it's day or night. This is the Default mode.
4. Debugging Mode (16): This mode is same as Pure Light Control mode without the 1 minute delay. This mode enables a quick check of the system installation and function.
5. Normal On (17): This mode is the same as Manual Mode (15) except now the load on/off Key is disabled.

LED Display	Mode
00	Pure light control mode
01-14	Light control + time control (1 to 14 hours)
15	Manual mode (default)
16	Debugging mode
17	Normal on mode

The load output has a soft start feature so it can smoothly and reliably power up high capacitance loads up to 20A. There is a convenient On/Off button to disconnect load power when the unit is operated in the default mode (15).

They have full electronic protections for short circuit, reverse current, over-power, over-voltage, over-charge, over-discharge and over-temperature. The built-in over-discharge protection and low self consumption ensures the battery is not over-discharged, which greatly increases the life of the batteries. All protections are auto-recovery.

The units are protected against lightning strikes with TVS diode protection. They operate over a wide industrial temperature range. Electronics are conformal coated for environmental protection.

An automatic battery equalization charge automatically engages once every 30days (Programmable). The equalization charge helps to balance the batteries in an array and reduce the possibility of battery sulfation.

Connections are via 6 screw terminals for wire size up to 10AWG. The controllers are internally fused for protection, but we recommend always using an external 20A fuse between the controller and the battery. There are four screw holes for wall mounting. In addition, there are two DIN Rail brackets for DIN Rail mounting included.

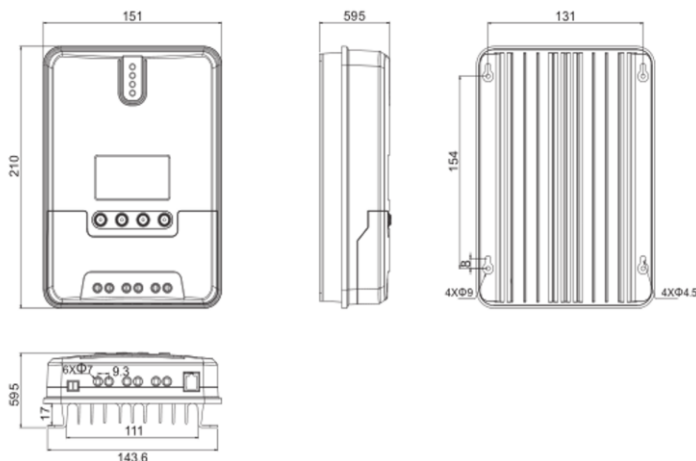
## Specifications

	TP-SC24-20-MPPT
<b>Rated Battery Voltage</b>	12/24 (Auto-Detect), 35V Max
<b>Battery Types Supported</b>	Lead Acid: AGM, GEL, Flooded Others: Lithium, Custom
<b>Rated Solar Current</b>	20A Max
<b>Max Solar Panel Size</b>	12V Battery = 260W 24V Battery = 520W
<b>Rated Load Current</b>	20A Max
<b>Maximum Capacitive Load</b>	10,000uF
<b>Max Solar Input Voltage</b>	110V (25C) ; 90V (-25C)
<b>Max Power Point Range</b>	+2VDC to 75VDC Battery Volts
<b>Conversion Efficiency</b>	96% Typ
<b>MPPT Tracking Efficiency</b>	>99%
<b>Communication Port</b>	RS232 (for TP-SC-BT1 only)
<b>Self-Consumption</b>	< 1W
<b>Temperature Compensation</b>	-3.0mV/°C/Cell
<b>Max Wire Size</b>	10 AWG
<b>Voltage and Current Accuracy</b>	+/-2%
<b>Grounding</b>	Positive Ground
<b>Environmental Protection</b>	IP32
<b>Certifications</b>	CE, RoHS
<b>Operating Temp</b>	-35°C to 55°C (-31°F to 131°F)
<b>Dimensions</b>	210x151x59.5mm (8.3x5.9x2.3")
<b>Weight</b>	1.4Kg (3lb)
<b>Warranty</b>	3 years

### Battery Charging Parameters

(for 24V battery configurations, double the voltages)

Voltage to set Battery type	Sealed lead-acid battery (SLD)	Gel lead-acid battery (GEL)	Open lead-acid battery (FLD)	Li battery (LI)	User (USE) (self-customized)
Over-voltage cut-off voltage	16.0V	16.0V	16.0V	—	9 to 17V
Equalizing voltage	14.6V	—	14.8V	—	9 to 17V
Boost voltage	14.4V	14.2V	14.6V	14.4V	9 to 17V
Floating charging voltage	13.8V	13.8V	13.8V	—	9 to 17V
Boost return voltage	13.2V	13.2V	13.2V	—	9 to 17V
Low-voltage cut-off return voltage	12.6V	12.6V	12.6V	12.6V	9 to 17V
Under-voltage warning voltage	12.0V	12.0V	12.0V	—	9 to 17V
Low-voltage cut-off voltage	11.1V	11.1V	11.1V	11.1V	9 to 17V
Discharging limit voltage	10.6V	10.6V	10.6V	—	9 to 17V
Over-discharge time delay	5s	5s	5s	—	1 to 30s
Equalizing charging duration	120 minutes	—	120 minutes	—	0 to 600 minutes
Equalizing charging interval	30 days	0 days	30 days	—	0 to 250D (0 means the equalizing charging function is disabled)
Boost charging duration	120 minutes	120 minutes	120 minutes	—	10 to 600 minutes



## System Ordering:

**TP-SC24-20-MPPT** 12/24V 20A MPPT Temperature Compensated Solar Charge Controller

## For further information contact:

[Tyconsystems.com](http://Tyconsystems.com)

