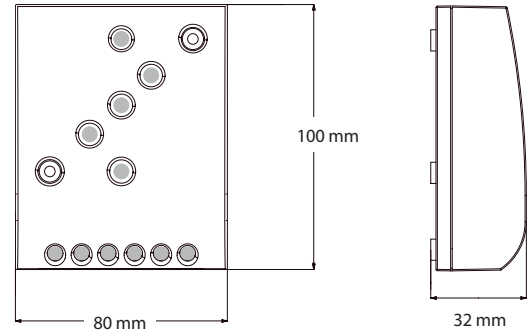




**Technical Drawing**



**Product Introduction**

The CML-USB series is designed for low cost applications and is ideal for small solar systems in need of a low battery disconnect feature. The electronic circuit is equipped with a microcontroller that provides high-efficiency charging technology together with a number of outstanding features like status display, warning and safety functions.

Leisure and rural electrification systems are the typical applications for the CML-USB controllers. They provide a perfect solution for cost-sensitive systems that require state-of-the-art system management.

A built-in USB charging output is ideal for charging mobile devices off a solar home system. Low-voltage disconnect prevents battery damage from deep discharging.

**Product Features**

- 3 battery state-of-charge LEDs
- 4-stage PWM regulation
- Load disconnect prewarning by acoustic signal
- Boost, equalization, and float charging
- USB charging output for mobile devices

**Technical Data**

Type	CML-USB-10	CML-USB-20
System Voltage	12 / 24 V auto recognition	
Max. Charge/Load Current	10 A	20 A
Float Charge	13.8 / 27.6 V (25 °C)	
Main Charge	14.4 / 28.8 V (25 °C), 0.5 h daily	
Boost Charge	14.4 / 28.8 V (25 °C), 0.5 h daily activation: battery voltage <12.3 / 24.6 V	
Equalization Charge	14.8 / 29.6 V (25 °C), 0.5 h daily activation: battery voltage <12.1 / 24.2 V (at least every 30 days)	
Deep-Discharge Protection	11.4-11.9 V / 22.8 -23.8 V (by SOC) 11.0 / 22.0 V (by voltage)	
Reconnect Level	12.8 / 25.6 V	
Overvoltage Protection	15.5 / 31.0 V	
Undervoltage Protection	10.5 / 21.0 V	
Max. PV Panel Voltage	30 V / 50 V	
Temperature Compensation	-24 mV/K (12 V); -48 mV/K (24 V)	
Idle Self-Consumption	< 4 mA	
Grounding	Common Positive	
Ambient Temperature	-40 to +45 °C	
Max. Altitude	4,000 m above sea level	
Battery Type	Lead acid (gel, AGM, flooded)	
USB Charging Port	5 V, 700 mA	
Max. Wire Cross Section	16 mm <sup>2</sup> (AWG 6)	
Dimensions (WxHxD)	80 x 100 x 32 mm / 3.1 x 4 x 1.3 in	
Weight	0.16 kg / 0.35 lb	
Ingress Protection	IP20	
Certificates	CE compliant, RoHS compliant	
Warranty	5 years	