

Figure 19.3 $I-V$ curve of a 36-cell PV module and characteristic curve of a 12-V lead acid battery with 3-m input lead (1.5 mm^2 cross-section) for three different charging currents. The shaded areas show the power dissipated in the control element

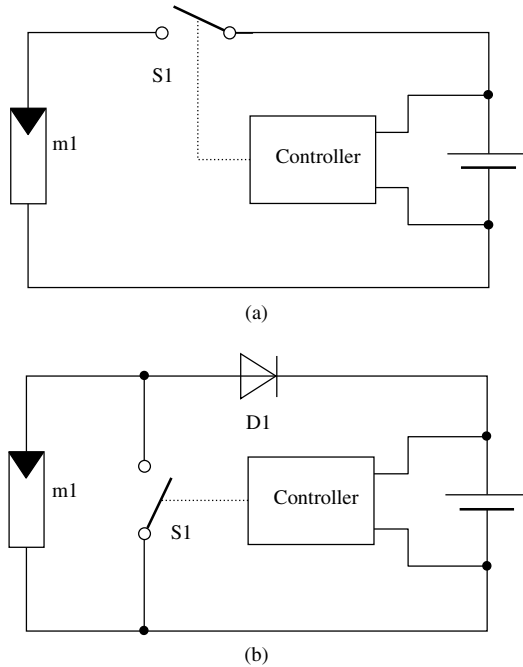


Figure 19.4 Principle of (a) series and (b) shunt controllers

no problems with electromagnetic compatibility (EMC), and the battery will be charged with a life-extending CC without micro-cycles.

19.1.1.3 Switching controllers

The above-mentioned disadvantage of intensive heat dissipation in linear charge controllers can be overcome with switching controllers. In these controllers, the control element is either fully closed (conducting) or fully open (blocking). Under ideal conditions,