



# Universal buck-boost solar controller 450W max, with MPPT, powering a motor and/or a battery

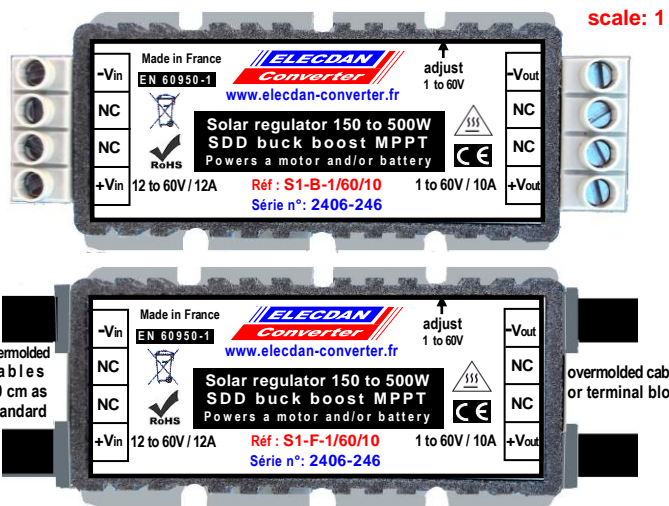
Any input voltage from 12V to 60V  
Adjustable output voltages, max range: 1V to 60V



Made in France

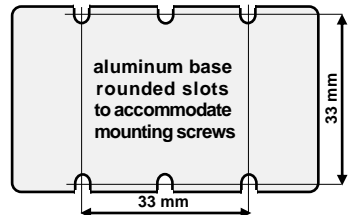
04/04/24  
(6183)

2 presentations for a same powerhouse of performances

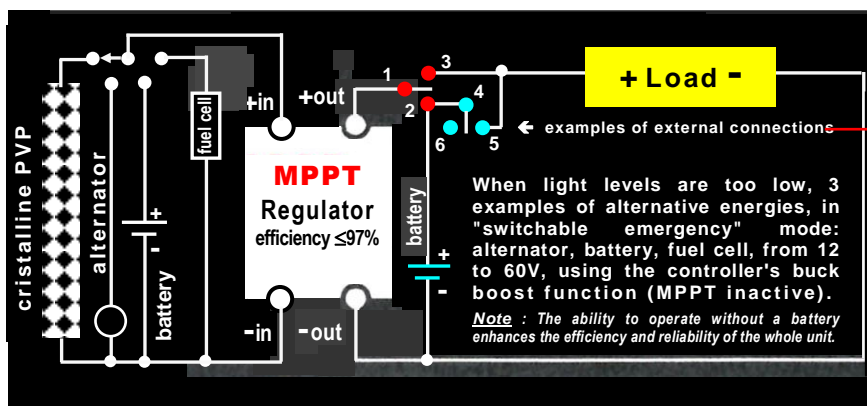


scale: 1

- Case: aluminum and PA12 65 x 29 x 16mm / 30cm<sup>3</sup>
- Base: aluminum; 61 x 37 x 3mm
- Set: 65 x 37 x 19mm; weight: 90g
- Screw terminals (B) or wires 4mm<sup>2</sup>(F)
- Mounting: 4 M3 ; spacing 33 x ≥ 33mm
- Setting Vs: inbuilt trimmer (10-round-axis)



SKU: case, type, Vout (or Vout range), İout, option					Price (€)
case	type	Vout (V)	Vout range (V)	İout (A)	
S1	Terminals: B Wires: F	value on demand	24 to 30	10	
			36 to 48		
			40 to 60		
			1 to 60		
Some options and their references			limitable current: L on / off ; ON external settings: R		
Examples of references			S1-B-40/60/10 S1-F-36/48/10		



In the absence of a battery :

1st example: the torque and speed of a motor (e.g. helical pump) adapt perfectly to variations in luminosity morning, noon and night,

2nd example: on a SDD solar bicycle, equipped with a simple 48V / 250W motor, the contribution of solar energy eliminates or complements muscular effort. In addition :

1/ the "1 to 60V setting" option, via an external resistor, enables the "manual gas pedal" function

2/ the "ON / OFF" option, via push-button, enables or disables motor power supply (safety).

link	link	receiver supply	battery supply
1 & 3	4 & 6	yes	no
1 & 2	4 & 6	no	yes
1 & 3	4 & 5	yes	yes

This MPPT solar controller, delivering up to 450W (600W in "switchable backup" mode), is the latest addition to our range of solar controllers, from 150W to 2.4 kW. Its universal feature sets it apart:

- 1/ A very wide range of input and output voltages, and easy, immediate set-up.
- 2/ Direct use of photovoltaic panel at voltages higher or lower than its output voltage.
- 3/ Its self-powered MPPT allows battery-free operation, even in low light conditions, in order to continue driving a motor in under-powered mode or to recharge a completely discharged battery (if any).
- 4/ High automatic modulation of the selected output voltage, 60V max, which can be reduced to 1V in case of high inrush current or very low luminosity (see table above: Vout at requested value and suggested Vout ranges).
- 5/ Its conversion efficiency, independent of thermal variations of the photovoltaic panel.
- 6/ Automatic restart after high inrush current, potential mechanical blockage, short-circuit, overheating, intense electromagnetic disturbance (climatic one or malicious one in the intent of energy neutralization).
- 7/ Total elimination of chemical capacitors, resulting in extreme reliability and miniaturization.
- 8/ The choice of an operating temperature range (-30°C to +100°C), for all components.

**Permissible input voltage Vin** : 12 to 60V (65V at no load), from (except in "emergency" mode) 30 to 100 crystalline cells (generally at Vmpp = 0.55V / 5W, at a temperature of 25°C) making up the standard or special photovoltaic panel.

**Input current** : limited to 12A, it determines Pin (Pin) max = Vin x 12A, hence output power (Pout) = Pin x efficiency (≤97%). Please note, moreover, that input power depends on the 5W (generally) of each cell and their number. Example: with 100 cells, Vin = 55V, Pin = 5W x 100 = 500W (brightness 100%) → P output = 500W x ≤0.97

**Protections** ➤ IP67 molding (shock, vibration, humidity); output current limited to 10A (overload and short-circuit)  
➤ protection of the transmission mechanics: descent to 1V and gradual rise after a sudden connection

**Thermal characteristics** ➤ case thermal resistance: 6°C / W; case temperature extremes: -30°C to +90°C  
➤ easy cooling on a simple thermally conductive surface

**Options** : ON/OFF. Output current limitable from 1A to 10A. External voltage and current settings via resistors.

**Notes** ➤ In CHARGE REGULATOR mode for 12V, 24V, 36V, 48V lithium batteries, their inbuilt BMS "Battery Management System" and user-selectable max charge voltage secure the battery's min and max voltages. The CHARGE REGULATOR can even be mounted (on an insulated cooler support) with the 2 battery terminals.  
➤ Powered by independent panels, these controllers can be connected in series or in parallel.

**Standards and specifications** : EN/UL/62368/RoHS; MTBF > 5.10<sup>5</sup> h, thanks to the absence of chemical capacitors (base at 50°C).

See also sheets : 1 "5116", 2 "5088", 3 "6154", 4 "6013", 5 "6155", 6 "6157", 7 "6158", 8 "6161", 9 "6163", 10 "6165", 11 "6168", 12 "6171", 13 "6173" Heatsinks, 14 & 15 various suggestions and applications

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