

PRESENTATION :

This micro buck regulator, ideal for charging various batteries, is housed in an all-aluminum case and molded in a resin that homogenizes its internal temperature and makes it insensitive to humidity (IP67), dust, shocks and vibrations. It delivers:

- an available power of **100W under 4V**, up to **400W under 40V**
- a current of 25A to 10A, as the output voltage increases from 4V to 40V

To optimize the performances of this micro controller (efficiency up to 98%), please see the table below; it directly determines the most suitable operating modes:

- output current "**i_{out max}**" according to chosen "**V_{out}**"
- (extrapolated) knowledge of efficiencies, according to "**i_{out}**" and "**V_{out}**"

INPUT VOLTAGE V_{in} : any voltage, from 8.5V to 55V, necessarily a few volts higher than the chosen output

OUTPUT VOLTAGE V_{out} and possible choices:

- either adjustable from 4 to 40V with inbuilt trimmer "10 rounds" Ø 3mm (photo ①)
- or controllable by 1V to 10V, from 4V to 40V; ex: 5V → 20V (photo ②)
- or adjustable from 4 to 40V by external resistor of 15kΩ to 80Ω (photo ③)
- or factory-set fixed value, previously chosen (photo ④)

OUTPUT CURRENT i_{out}:

- 0 to 25A, according to the load and optimizations of the table, for V_{out} ≥ 3V
- examples of **maximum** permitted currents for V_{out} = 24V:
 - ◆ i_{out max} = 14A for V_{in} minimized at 27V; efficiency = 97%
 - ◆ i_{out max} = 13A for V_{in} fixed at 41V; efficiency = 96%
 - ◆ i_{out max} = 12A for V_{in} increased at 55V; efficiency = 95%
- adjustable from 2.5A to 25A with inbuilt trimmer having axis Ø 3mm (photo ①)
- or controllable by 1 to 10V, from 2.5 to 25A; ex: 5V → 12.5A (photo ②)
- or linearly adjustable (1A/Ω) from 2.5 to 25A, with ext R of 2.5 to 25Ω (photo ③)
- or factory-set on a fixed value (ex: 14A), for V_{out} fixed at 24V (photo ④)

NB: stability, at constant current, better than 2%, V_{out} varying from 3V to V_{out max}.

ISOLATION : no; -V_{in} and -V_{out} terminals are internally connected

LINE and LOAD REGULATIONS: better than 2%

RESIDUAL : < 0.5% of V_{out}

SWITCHING FREQUENCY : ≈ 390kHz

ON/OFF and remote regulation S⁺ : options (photo ⑤)

THERMAL CHARACTERISTICS

- thermal resistance of the case: 6°C / W
- maximum case temperature: 100°C
- storage temperature: -50°C to +120°C
- suggested heatsink: black alu, 150 x 150 x 2mm (thermal R ≈ 2°C/W)

CASE

- all aluminum; 50.5 x 50.5 x 26 mm (see photo ④)
- weight: 140g
- fastening: 2 unthreaded through-holes Ø 4.2mm, and 2 M4 blind-holes on support side, center-to-center distances: 40.5 x 40.5 mm

SCREW TERMINAL BLOCK

- for "power" connections: Phoenix, 4 connections 8mm²
- additive connections: 4 or 5 connections for wires Ø ≤ 1.8mm

STANDARDS and SPECIFICATIONS

- CSA / 60950-1 / RoHS
- MTBF > 2.10⁶ hours, at full load, base at 45°C

Scale: 1 - Dimensions in mm (thickness: 25)

Version ① : inbuilt i_{out} and V_{out} settings

SKU: 4010Ri



Version ② : i_{out} and V_{out} settings by "1 to 10V" control

SKU: 4010RP



SKU	Version	Settings		Unit price VAT exclud. (€)
		i _{out} 2.5 to 25A	V _{out} 4 to 40V	
4010Ri	①	inbuilt	inbuilt	
4010RP	②	1V to 10V	1V to 10V	
4010RR	③	2.5 to 25Ω	15kΩ to 80Ω	
4010RC...	④	factory setting	factory setting	
ON or S ⁺	⑤	option to be specified when ordering		

V_{in} : 8.5 to 55V; V_{in} ≥ V_{out} + 3V

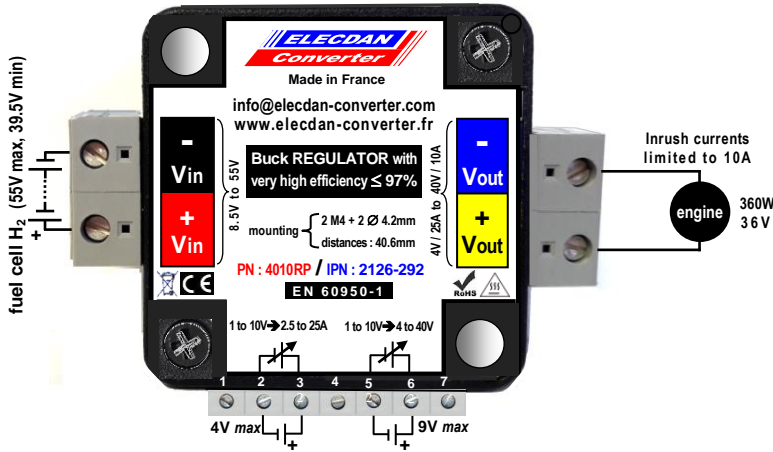
Please contact us for quantity prices

Six examples of output voltages V_{out}, extreme or characteristic, and linear optimization of i_{out} currents and efficiencies, according to the Δ difference "V_{in max} - V_{in min}"

Efficiency →		90 to 86%	97 to 93%	97 to 94%	97 to 95%	97%	98 to 97%
Output	V _{out} voltage	4V	12V	15V	24V	36V	40V
	Possible external adjustment by R	15kΩ	1.83kΩ	1.27kΩ	0.52kΩ	0.15kΩ	80Ω
	i _{out} current	25 to 22.5A	22.5 to 16A	20 to 15A	14 to 12A	10A	10A
	Maximum power	100W	270W	300W	336W	360W	400W
Input voltage V _{in min} and max →		8.5 to 50V	15 to 55V	18 to 55V	27 to 55V	39.5 to 55V	44 to 55V

Some applications of this Micro-Regulator

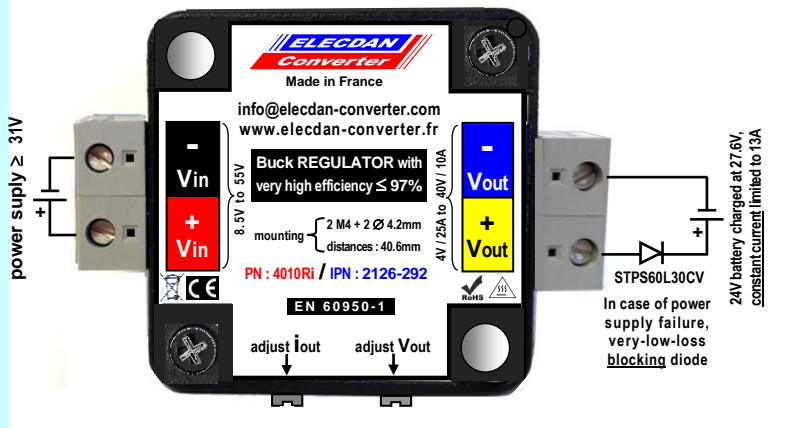
Controlled automatism



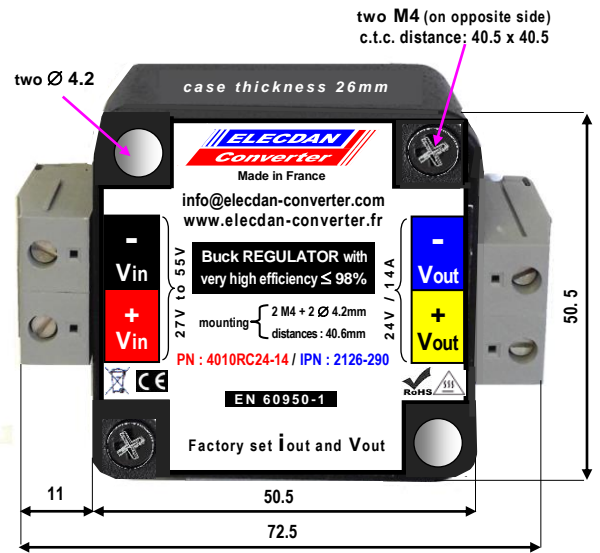
Version ③: I_{out} and V_{out} settings by external resistors
SKU: 4010RR



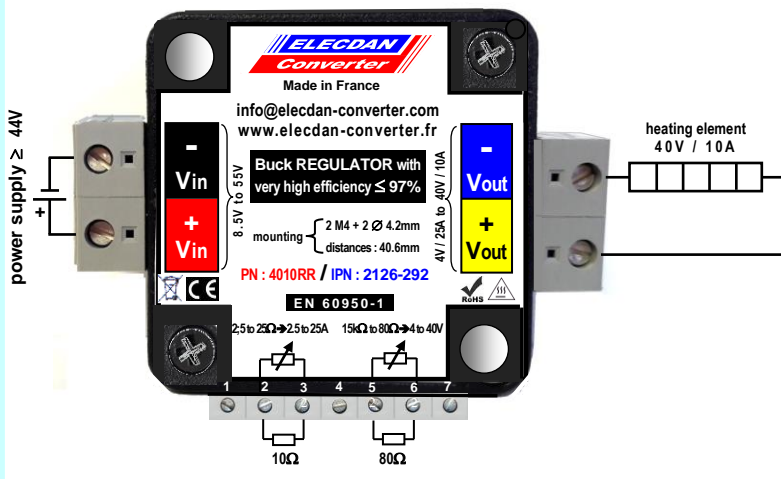
Double safety battery charging



Version ④: Custom; I_{out} and V_{out} have a fixed, factory-set value.
Example of SKU: 4010RC24-14

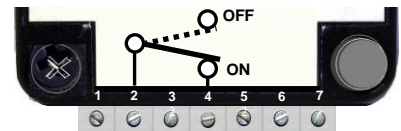


Heat treatments with external manual settings

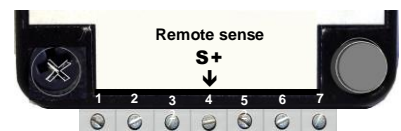


Version ⑤ ① or ② (lower part of the case)

⑤ ① Remote ON / OFF Add SKU: ON



⑤ ② Remote sense Add SKU: S+



Please see also:

- Mini Buck Regulator; same case but more powerful: 625W ; with suitable connectors; 17 to 60V → 5V / 38A to 25V / 25A
- Super Buck-Boost regulator, power up to 2.8kW
 - * surface ≈ half-brick
 - * 8 to 60V → 0 to 60V / 50A
 - * 9 to 88V → 0 to 88V / 27.5A
- Mini Regulator 336W with inbuilt MPPT for solar direct drive (SDD)
Dimensions: 50.5 x 50.5 x 26 mm