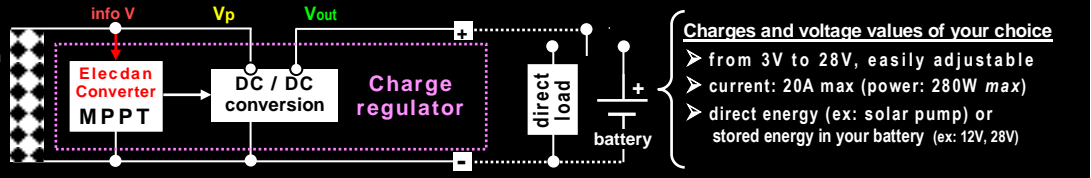


Example of application
 monocrystalline silicon
 photovoltaic module
 1.5m², 40V / 33V / 300W



Charges and voltage values of your choice

- from 3V to 28V, easily adjustable
- current: 20A max (power: 280W max)
- direct energy (ex: solar pump) or stored energy in your battery (ex: 12V, 28V)

INNOVATION

New generation MPPT "Non-Disturbing Method" (NDM). This high-performance breakthrough technique is free from current measurements, microprocessor, its algorithms and memories, while drastically reducing the number and complexity of its electronic components.

ROLE OF THE MPPT

This tracking device (Maximum Power Point Tracking) automatically adapts to solar intensity (fig. ①), thermal variations of the photovoltaic panel (fig. ②), possible fluctuations in the load, and inevitable obsolescence of photovoltaic cells. Its immediate control, by internal differential *analog* comparison, determines the ideal **MPP** operating point (fig. ③).

Consequently, the MPPT is associated with a very high efficiency DC-DC REGULATOR, which it controls. The latter therefore transmits optimized power to the LOAD. For current productions, the load is a battery $\geq 10V$, accumulating the energy produced before its distribution.

The **Charge Regulator**, made up of our **MPPT + Regulator**, also authorizes the *direct* supply of any loads, excluding the battery. For example, the motors of pumps or propeller agitators of water bodies, continuing to operate, at reduced speed, with declining luminosities generating decreasing voltages from 24 to 3V.

CONCLUSION

This **high-performance charge regulator** guarantees the quality and flexibility of a photovoltaic installation, with conventional mono or polycrystalline cells, accepting any charge. The average efficiency of this installation is then increased by more than 30% and even much more, at low light on direct load.

For information: without charge regulator and with an initial power of 300W (10A / 30V / 3 Ω) decreasing to 100W (3.33A / 10V / 3 Ω), we would collect, on the constant load of 3 Ω , only 33W (instead of $\approx 97W$ with the charge regulator).

NB: history and comparative study of MPPT

Developed in 1958, then benefiting from space research, photovoltaic energy was not really optimized until 1968, when NASA integrated a calculator in its MPPT.

Currently, there are 7 main types of MPPT (the first 3 with microprocessors).

- ① **P & O** "Perturb and Observe" (perturbs, as the name says, with risk of oscillations)
- ② **ic** "Incremental Conductance" (complex calculations and risks of oscillations)
- ③ **P & O + ic** Efficient combination requiring increased computing power
- ④ **AM** Analog multiplier; delicate and expensive process
- ⑤ **CD** Cyclic disconnection for assumed MPPT; simple but imprecise
- ⑥ **CV** Approximate values for comparison; notoriously imprecise
- ⑦ **NDM** "Non Disturbing Method" from **Elecdan-Converter**. Advantages:
 - elimination of predictive, corrective, and disturbing "voltage x current" calculations
 - an analog and internal differential drive determines the ideal operating point (MPP) under all circumstances.
 - technology: no shunt, no microprocessor, just a few components whose reduced number and simplicity guarantee unprecedented reliability

