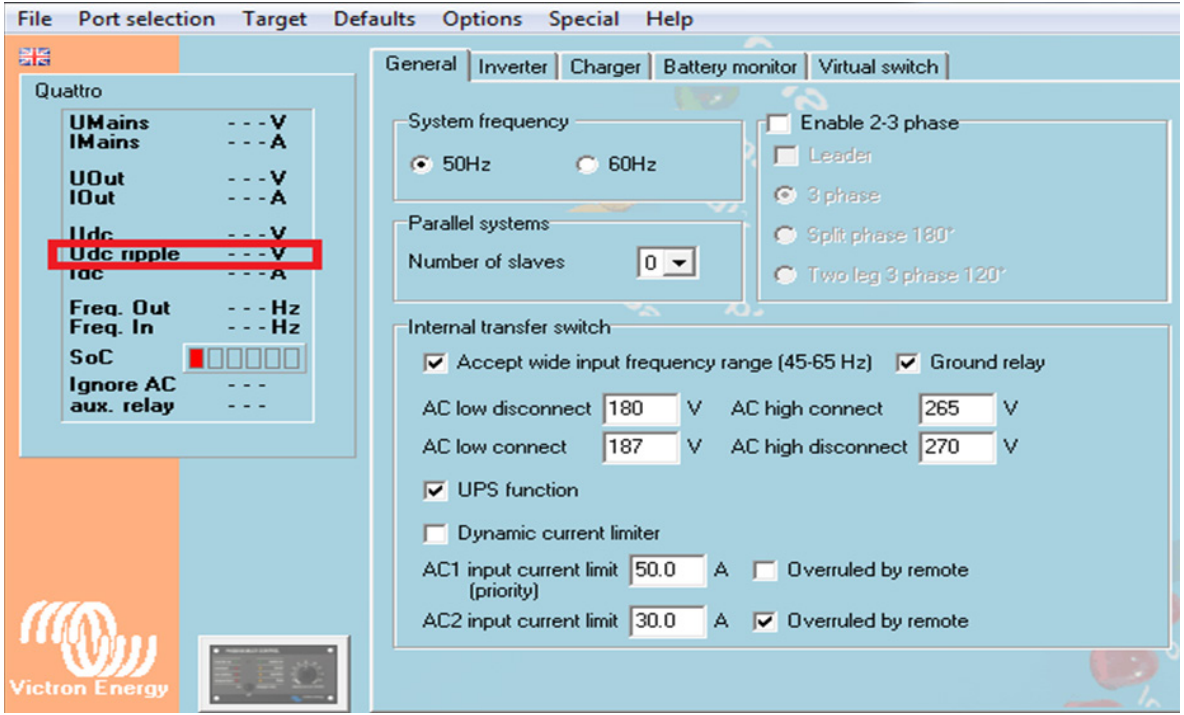
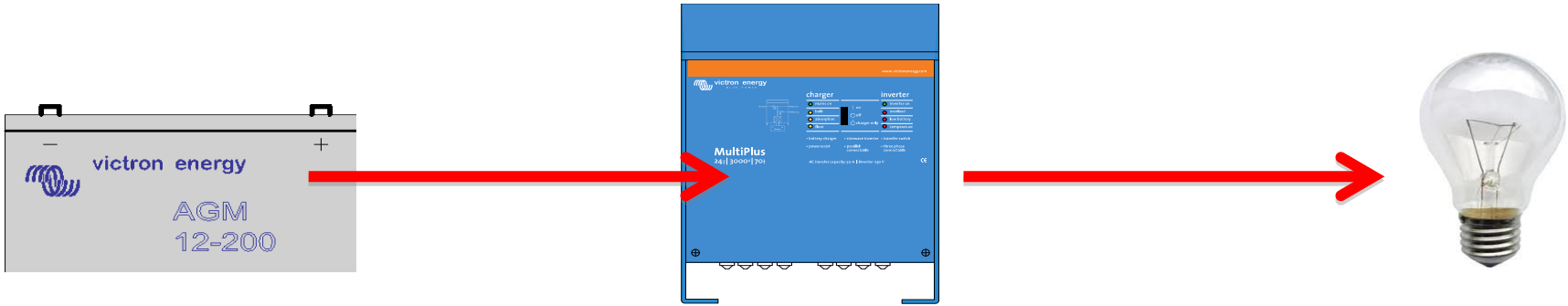
victron energy
BLUE POWER

AC ripple in a DC system

Ripple, where does it come from ?

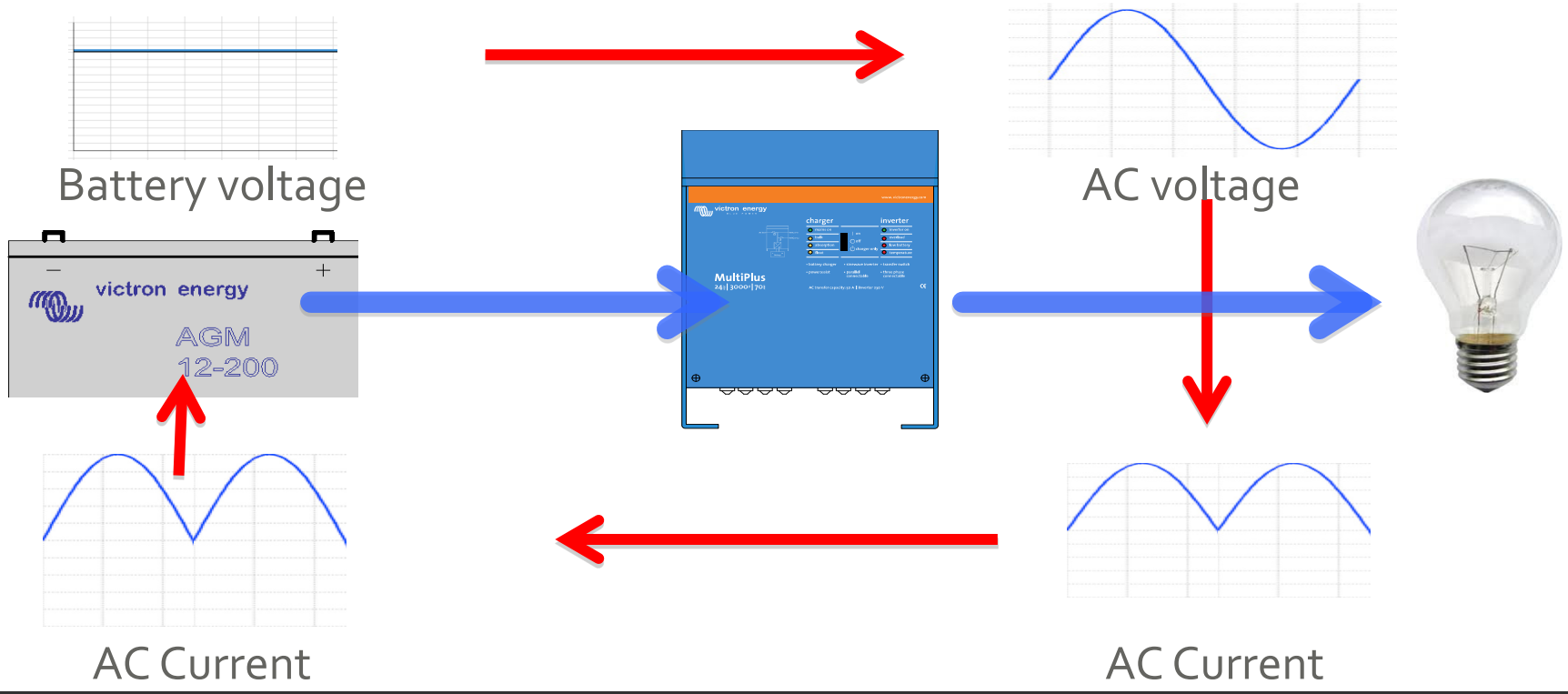


Ripple, where does it come from ?



Ripple appears in a system were the power source is a battery

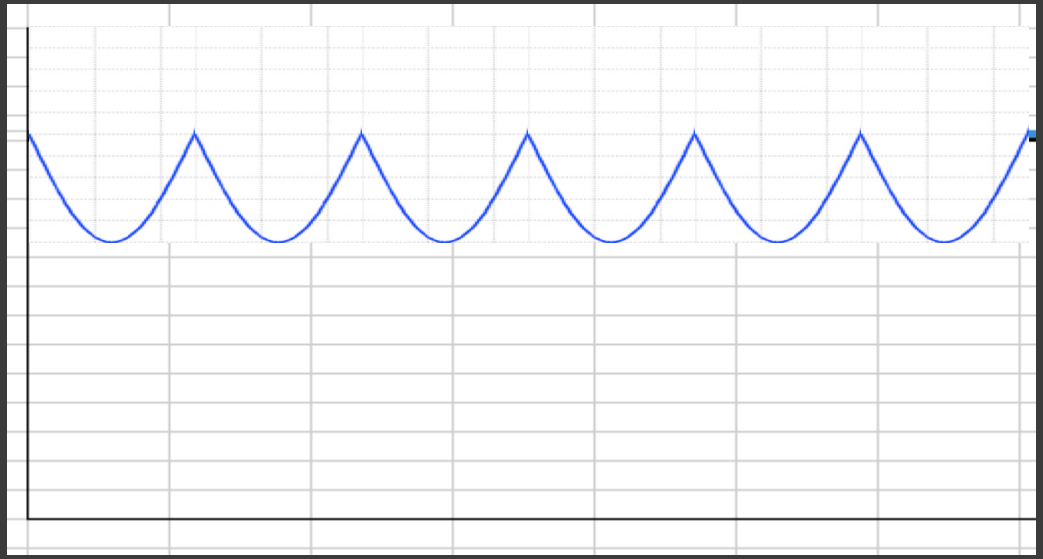
Ripple, where does it come from?



An AC currentpeak on the battery will make the voltage drop

Ripple, where does it come from ?

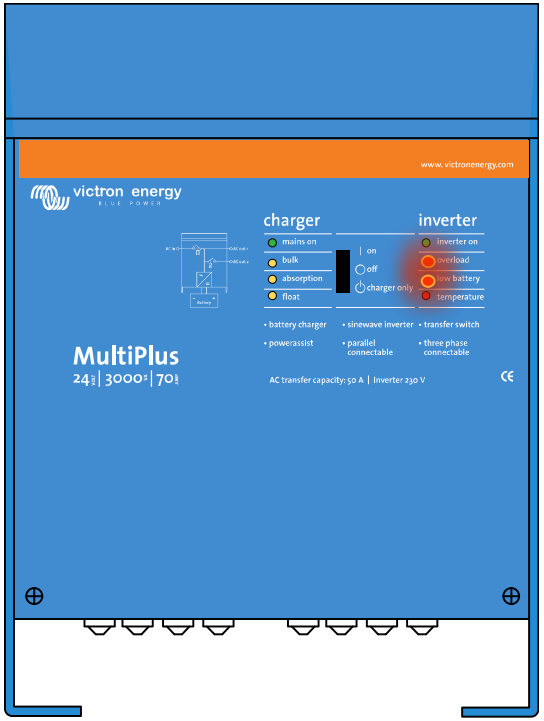
Battery voltage



Ripple

Because the battery drops in voltage when there is a load a ripple will appear

Ripple LED indication



An perfectly wired installation will under full load give a ripple of +/- 0,6 to 0,8 volt.

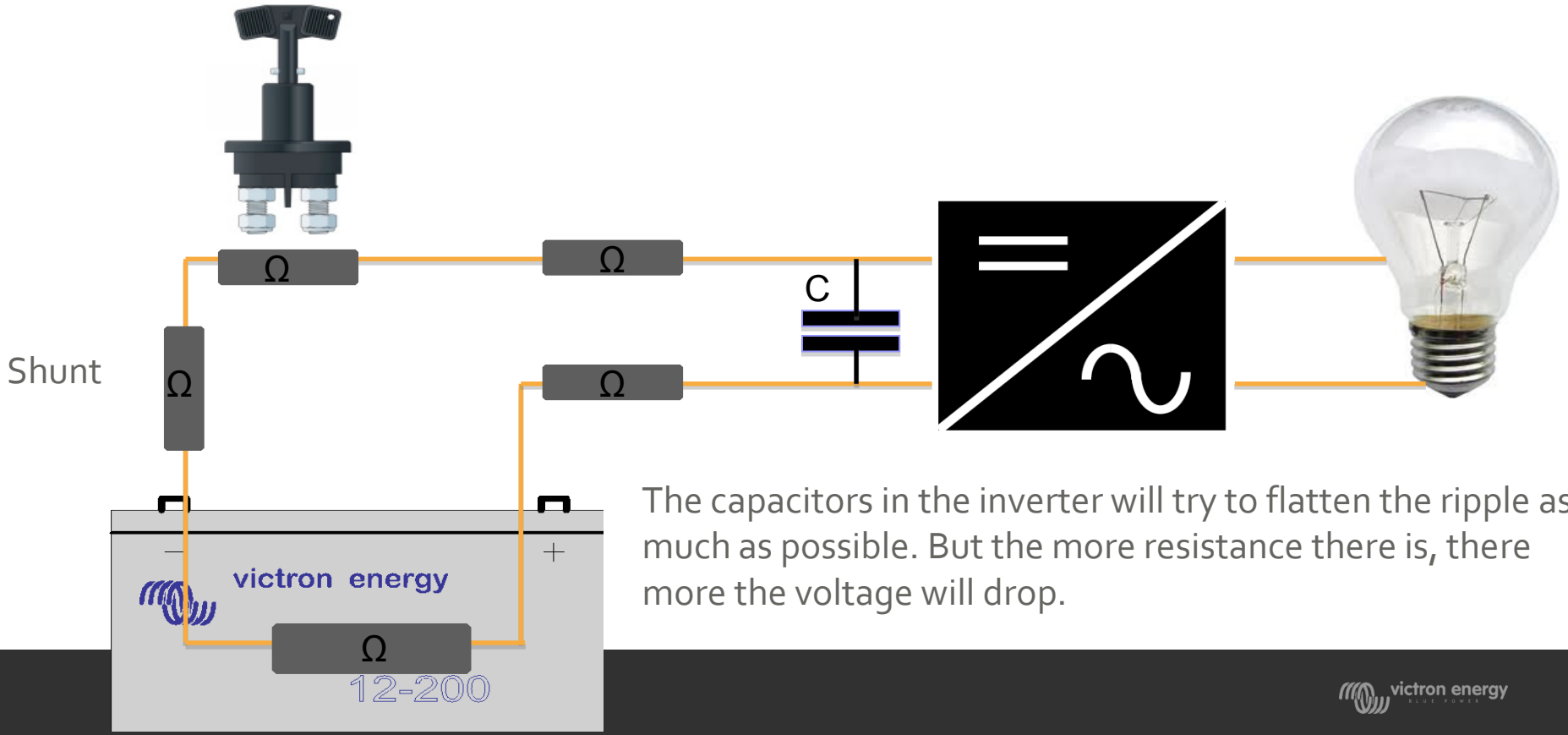
LED indications:

Overload and low battery together

flash > 1,2V ripple

lit up > 1,5 V ripple (unit locked out)

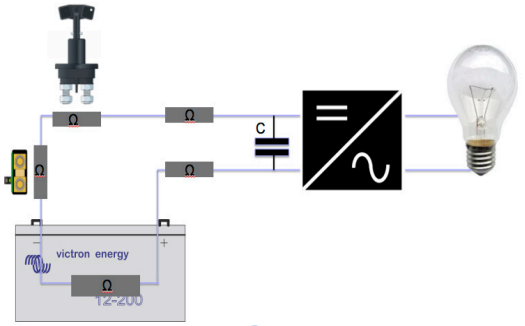
Low resistance in DC system results in low ripple



The capacitors in the inverter will try to flatten the ripple as much as possible. But the more resistance there is, there more the voltage will drop.

Results of ripple

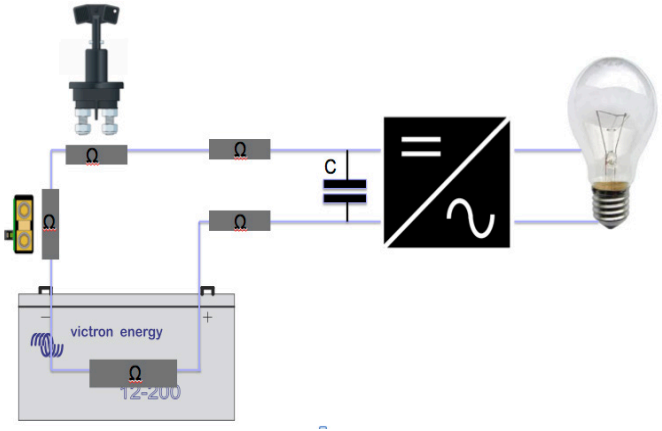
- Due to large currents in the capacitors the lifetime of inverters decreases
- Due to the discharge/charge effect the battery lifetime is limited
- Due to ripple during charging the charge power is reduced.
- Due to the ripple also other connected loads will suffer from the same ripple



Tips:

1) The height of the ripple can be seen in VEConfigure
2) DC Ripple can also be measured by having the multi meter on the ac range but measure on the DC system

Low resistance in DC system results in low ripple



Make sure resistance in the DC system is LOW

In practice:

- The capacity of the battery bank must be high enough
- Use as little cable length as possible
- Use the correct size (*)
- Use quality main switches
- Avoid to much fuses
- Avoid more then one shunt in a system

(*) Rule of thumb ; Amps/3 = size mm2 up to 5 metre (every 5 mtr one step size up)

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