SolidSwitch 104

A 70V/4A solid state switch

www.aeppacific.co.nz

The SolidSwitch 104 switches DC loads of up to 70V/4A and can be controlled by a low power digital signal. It has three typical use cases:

1. Control an external alternator regulator, such as a Balmar or Mastervolt Alpha pro in a Victron lithium system.
2. Switch a DC load, such as a light. A low power control circuit, max current drawn will only be 100 µA, can then control a load of up to 4 Amps.
3. Increase the number of chargers that can be wired to the ATC (allow-to-charge) output of a Victron BMS.

What is it that makes the SolidSwitch 104 unique?

The feature making it such a usable switch is its low current draw. The SolidSwitch will draw 0.04 Ah a month, while a small relay can easily take 10 Ah a month, or typically even 22 Ah (*).

That reduction by a factor of 250 is crucial when using it in a lithium system to connect and control the alternator regulator: the control circuit will always be drawing its standby power. As well as when using it to increase the number of chargers that can be wired to a BMS ATC contact. By using a SolidSwitch rather than an ordinary relay, the parasitic load is reduced to the order of magnitude of the battery bank self discharge.

Note that, even when the batteries are fully charged, the ATC output of the BMS will still be enabled. And as such, control circuits such as a relay or in this case the SolidSwitch will be enabled and drawing power. Even when the charger or alternator is not charging.

For this example, that means that when using a relay, the small relay draws 10Ah per month from the battery bank, even when the engine isn't running. While the SolidSwitch only draws 0,04Ah, which is most likely far below the self-discharge of the batteries and thus neglectable.

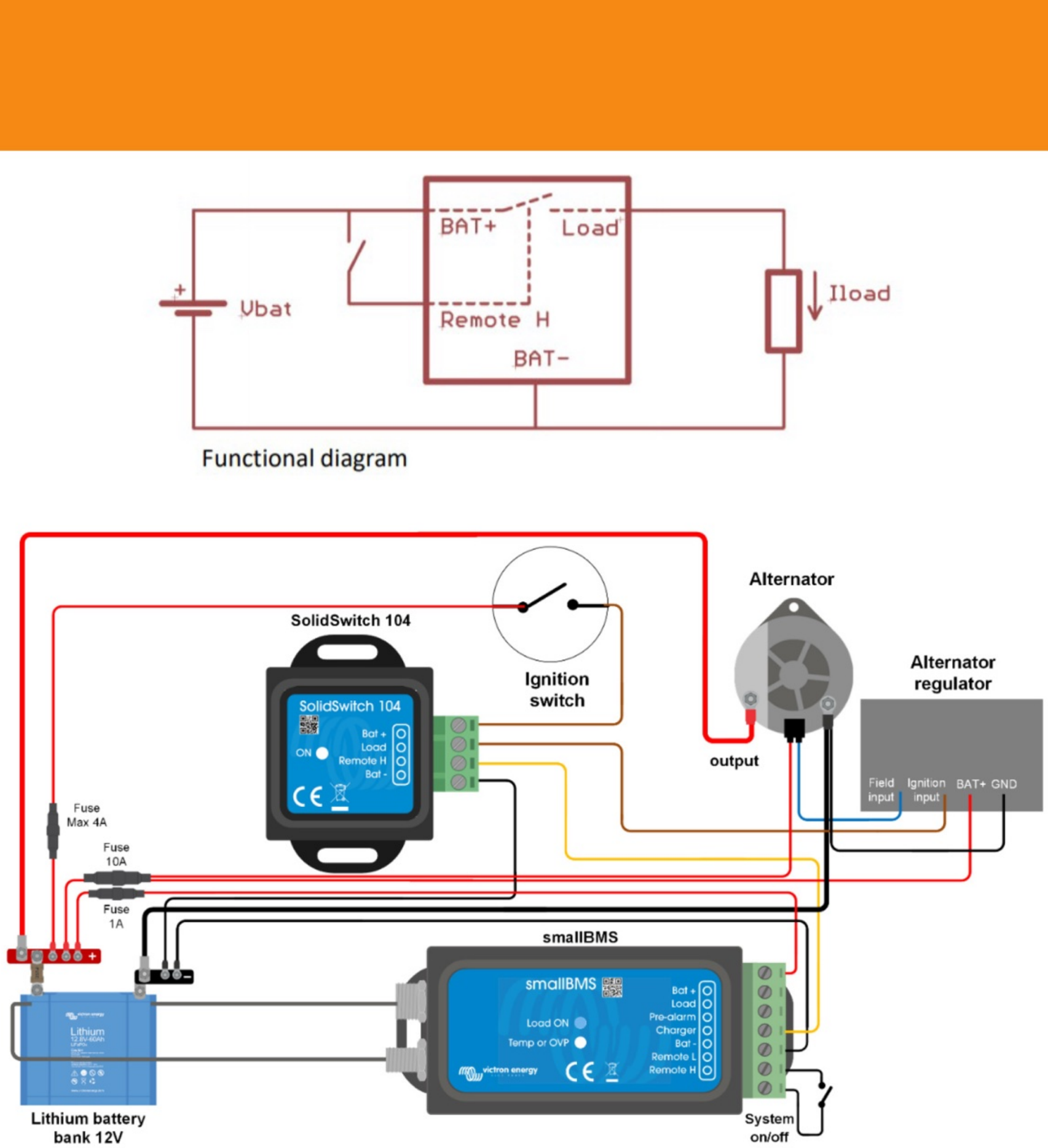
(*) If for example a 12V 1A relay with a 400 Ohm coil is used, the current draw will be 30mA, or 21.6 Ah per month.

Compatible Load types

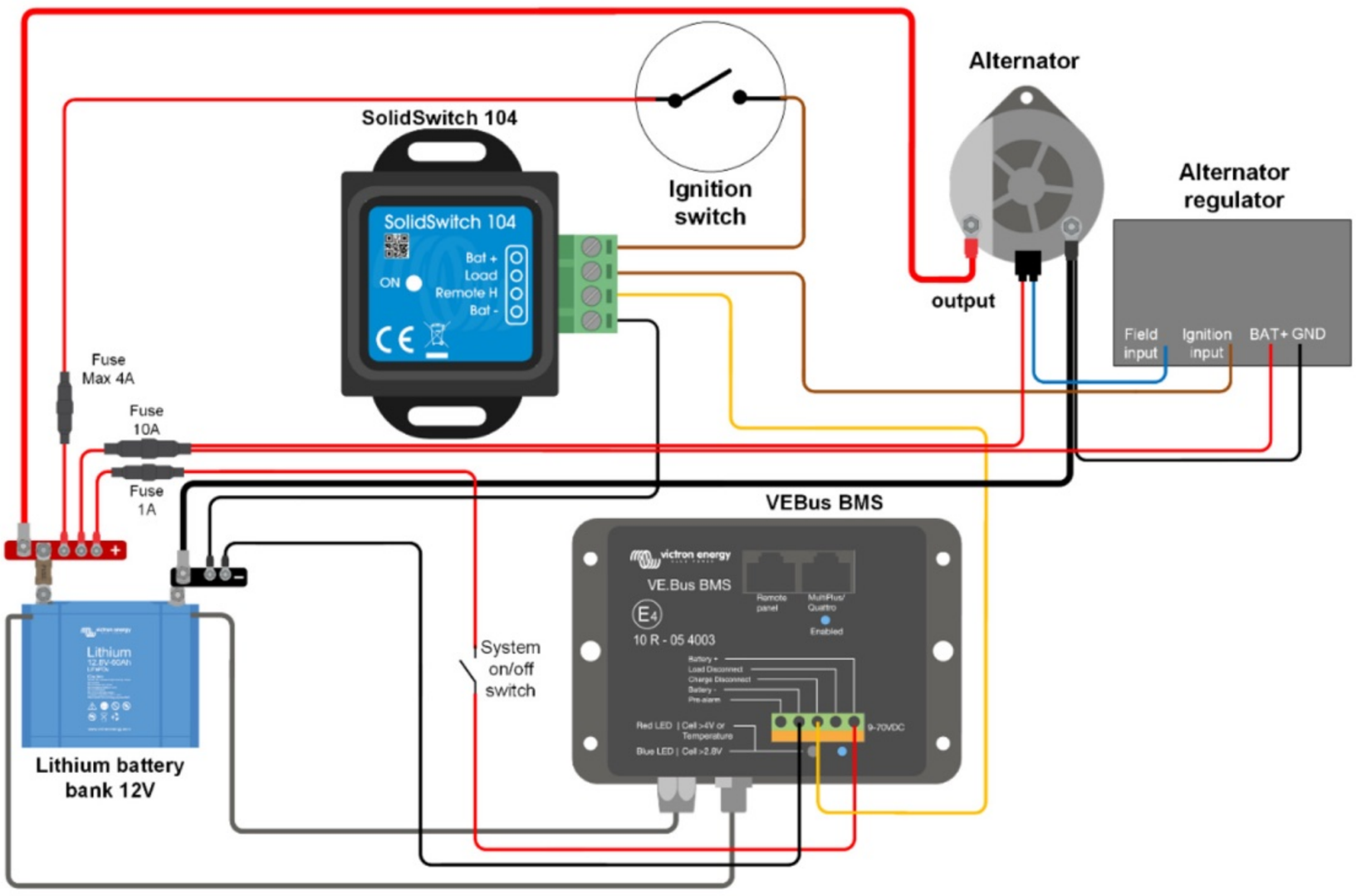
The DC load can be resistive, capacitive or inductive (such as the coil of a high-power contactor).

SolidSwitch 104	
Operating Input voltage range (Vbat)	8 – 70V DC
Maximum load current	4A
Maximum capacitive load	Vbat up to 15V: 1000 µF 15V<Vbat<30V: 400 µF 30V<Vbat<70V: 50 µF
Maximum inductive load	Up to 1A: 1000 mH 1A<I<2A: 100 mH More than 2A: 10 mH
Remote input (Vin)	Free floating or Vin< 3V: load off 3,3V < Vin < 70V: load on Min. input current to switch on: 30 µA
Operating temperature	-20 to +50°C 0 - 120°F
Humidity	Max. 95% (non-condensing)
Protection grade	IP20
Material and colour	ABS, matt black
Dimensions (h x w x d)	58 x 66 x 23 mm

Functional diagram



Example diagram 1: SolidSwitch 104 used with a smallBMS, to control the alternator



Example diagram 2: SolidSwitch 104 used with a VE.Bus BMS, to control the alternator