

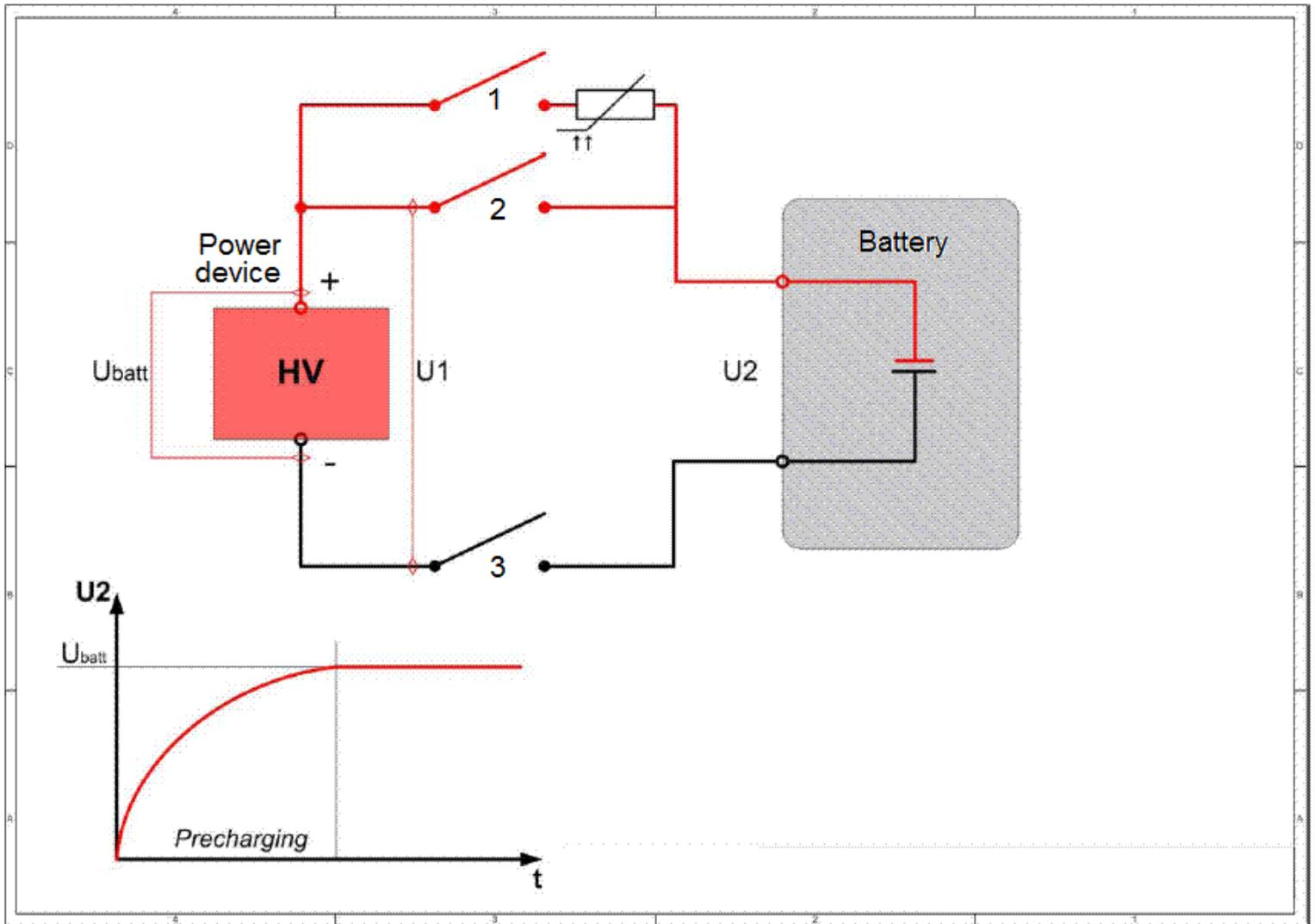


Application Note MMC_006

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BRUSA NLG5xx battery chargers precharging requirements.

The following diagram is taken from BRUSA EVB1-xxx-xx battery user manual for illustration purpose.



1. Close the pre-charging contactor (1).
2. Close the main contactor (3).
3. Check that current $U_1 = U_2$. If so,
4. Close the main contactor (2).
5. Open the pre-charging contactor (1).

Use precharge circuit when connecting battery to charger DC output to avoid damage to the charger. Typical precharging circuit is depicted above. The output of NLG5-xx is expected to be connected directly to the battery terminals (before contactors, fuses, service disconnects etc.) and stay under battery voltage at all times for the life of the pack. If no charging takes place, charger presents zero load to the pack so can be left connected to it at all times.

Should you need to keep disconnecting charger for service/replacing of the battery, precharging is REQUIRED every time charger's DC output is at zero volts and the battery is re-connected to it.

If your BMS controls relays/contactors connecting and disconnecting charger to the battery each time charging takes place, precharging circuit employing PTC or regular wire wound resistor (100...150 Ohm 3W range) must be implemented and normally be part of the vehicle PDU (Power Distribution Unit). For a standard precharging circuit and operation sequence depicted above, typical precharging time (U1 reach 95% of U2) is 1...3 seconds. Output capacitance of a NLG513xx charger model is about 6.5 μ F (very low ESR capacitors are used so expect significant peak current if no precharging is deployed). Other models have similar value.

Failure to comply with pre-charging requirements has been known to damage charger's so called C-converter (part of power stage sensors circuit).

Please note: this type of failure has distinctive recognizable signature and is not covered by manufacturer's warranty. Chargers with damaged C-converter can be repaired only at the factory.