

BATTERY SIMULATION TOOL FOR R&S®NGM200/NGU201 POWER SUPPLIES

Batteries are dynamic energy sources that diverge from ideal voltage sources. The R&S®NGM-K106 battery simulation option recreates battery models on the R&S®NGM200/NGU201 does far more than standard models.



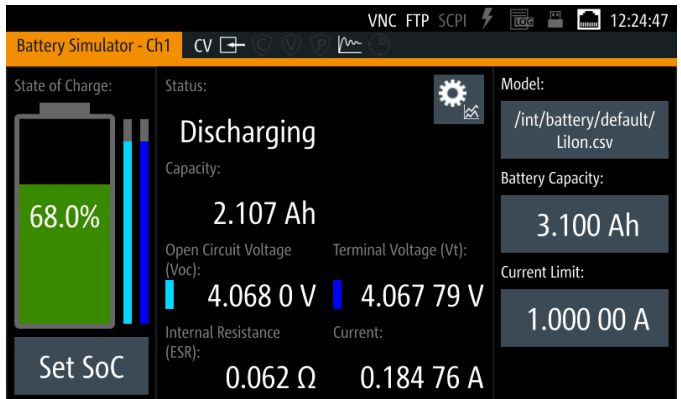
Your task

When developing battery-powered products, selecting batteries or rechargeable batteries can be a challenge. Batteries are dynamic energy sources with inconstant voltage that depends on the state of charge, load, temperature, age and much more. A battery system that meets all requirements is rare. Battery selection usually involves a compromise between various battery properties.

Rohde & Schwarz solution

The Rohde & Schwarz tool makes development work easier. The R&S®NGM-K106/NGU-K106 option for R&S®NGM200/NGU201 power supplies lets developers simulate battery behavior under different conditions and requirements, allowing real batteries to be used early in the R&D cycle.

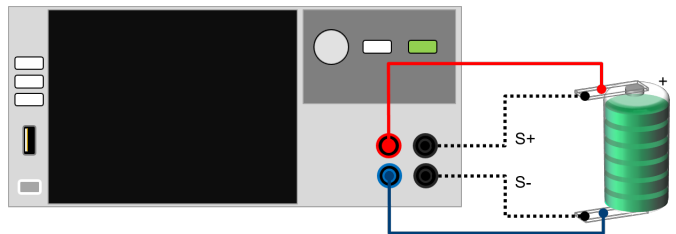
User interface of the battery simulation in the R&S®NGU201



The R&S®NGM200/NGU201 uses models with dynamic internal resistance that change with the state of charge, simulating batteries. The load step method can derive the parameters necessary to create a battery model file for the R&S®NGM200/NGU201.

A battery model file can easily be created with a spreadsheet, a text editor or directly in the battery model editor on the R&S®NGM200/NGU201. While a battery model is fairly simple and proper use requires advanced expertise for highly accurate emulations of Ni-MH cells, for example.

Battery test setup



Application Card | Version 01.00

ROHDE & SCHWARZ
Make ideas real



The R&S®NGM200/NGU201 has sample battery model files for lead acid, lithium-ion, nickel-cadmium and nickel-metal hydride batteries.

The battery modeling tool from Rohde&Schwarz greatly simplifies the parameterization needed to simulate and model batteries. R&S®NGM200/NGU201 power supply software users no longer have to write their own scripts for controls, measurements, data processing, data displays and model calculations.

Battery modeling tool

The battery modeling tool can measure relaxation, constant current discharge/charge and pulsed discharge. The relaxation measurement helps define the timing for pulsed discharges. Open-circuit voltage and internal resistance based on the state of charge can be determined from pulsed discharge or from constant current discharging/charging. The results from previous measurements can

be used to calculate a battery model. This model can be stored in a file and loaded in the R&S®NGM200/NGU201 power supply battery simulation.

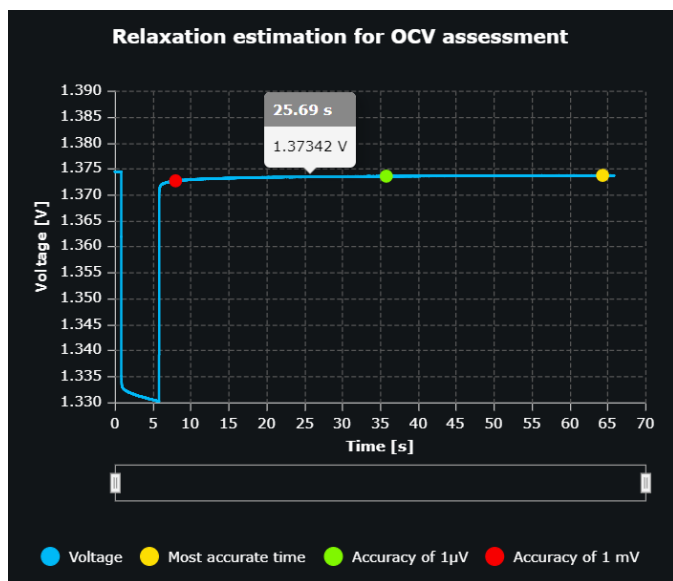
Summary

Battery simulations require a model with adjustable internal resistance. Without a battery modeling tool, model parameterization would require extensive research and a lot of computing to determine the correct measurement method. The battery modeling tool effectively supports R&S®NGM200/NGU201 users. Rohde&Schwarz power supplies eliminate the need to write scripts for instrument controls, measurements, data processing, data displays and model calculations.

See also

<https://www.rohde-schwarz.com/powersupplies>
<http://www.rohde-schwarz.com/appnote/1GP136>

Relaxation measurement on a NiMH AA battery cell



Designation	Type	Order No.
Single-channel power supply	R&S®NGM201	3638.4472.02
Two-channel power supply	R&S®NGM202	3638.4472.03
Battery simulation	R&S®NGM-K106	3636.6626.02
Two-quadrant source measure unit	R&S®NGU201	3639.3763.02
Battery simulation	R&S®NGU-K106	3663.0625.02

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 Battery simulation tool for R&S®NGM200/NGU201 power supplies
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