CONTROLLING MULTIPLE DC POWER SUPPLY CHANNELS (R&S®NGL200/NGM200)

DC power supplies from Rohde&Schwarz can be connected and configured for synchronized on/off switching of all channels across multiple power supplies in intricate and complex systems.

Your task

As technology grows more sophisticated, systems become more intricate, particularly battery management systems (BMS). These systems are essential to certain industries (such as automotive manufacturers). Battery management systems help optimize battery performance, safety and overall lifespan in various devices and systems. Improper battery management can reduce performance, while creating safety hazards, data loss and reduced reliability. High replacement costs and environmental concerns also demand battery life optimization.

Simulating battery behavior during testing can greatly reduce BMS risks. Simulations let designers and developers test BMS performance in a virtual environment, without any physical prototypes. They can identify and resolve potential problems before production starts, reducing the likelihood of real-world issues.

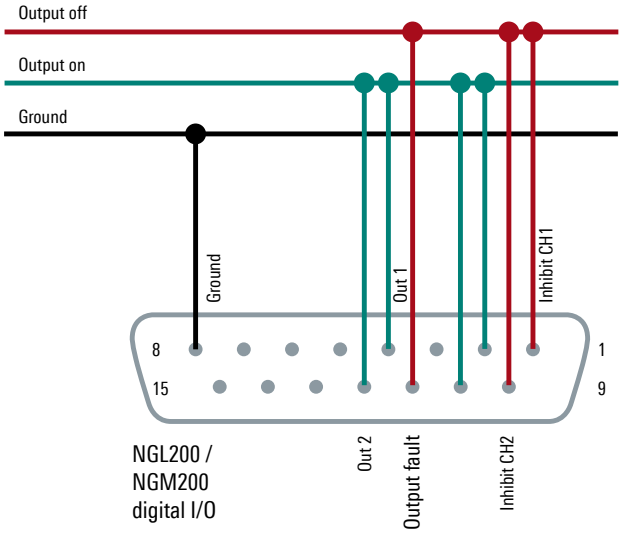
The Rohde&Schwarz solution

Rohde&Schwarz has a great solution that simultaneously and individually controls all power supply channels and switch outputs. All R&S®NGL200/NGM200 power supply channels are isolated from grounding equipment conductors and digital instrument grounds. Channels can be connected in parallel to increase current capability or in series for higher voltage or dual-voltage supplies. Either way, all power supply channels must be simultaneously switched on or off to protect circuitry and avoid overcurrent in any of the other channels.

Principle of synchronization

All connectors have the same wiring and configuration. The connections use a bus structure with three wire types: one for activating the output, one for switching off the outputs plus a ground connection. All outputs are switched simultaneously by manual or remote control using the digital I/O option from Rohde&Schwarz that synchronizes the simultaneous on/off operations of R&S®NGL200/NGM200 power supply channel outputs.

Bus structure for output synchronization



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Synchronized operation

Switching on any of the CH1 and CH2 buttons on an R&S®NGL202/NGM202 or the output button on an R&S®NGL201/NGM201 switches on all channels for the connected instruments.

Switching off any of the CH1 and CH2 buttons on an R&S®NGL202/NGM202 or the output button on an R&S®NGL201/NGM201 or deactivating any channel by a remote command switches off all channels for the connected instruments.

The channels may also be programmed with overcurrent, overvoltage and overpower protection, switching off all channels when values exceed the protection limit.

Summary

Multiple R&S®NGL200/NGM200 power supply channels can be connected in parallel or in series, such as when simulating battery cells during BMS testing. The channels can be controlled separately or collectively. The digital I/O option can be used to synchronously switch the channel outputs on or off.

See also

https://www.rohde-schwarz.com/manual/ngl200/
https://www.rohde-schwarz.com/manual/ngm200/
http://www.rohde-schwarz.com/appnote/1GP126

Designation	Type	Order No.
Single-channel power supply	R&S®NGL201	3639.3763.02
Two-channel power supply	R&S®NGL202	3639.3763.03
Single-channel power supply	R&S®NGM201	3638.4472.02
Two-channel power supply	R&S®NGM202	3638.4472.03
Digital trigger I/O	R&S®NGL-K103	3652.6385.02
Digital trigger I/O	R&S®NGM-K103	3643.9904.02

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