**R&S®NGM200**

**versus Keithley 2281S-20-6**

**Key features**
- Fast regulation of output voltage with minimum overshoot and very fast load recovery time
- Minimum residual ripple and noise to supply interference-free voltage to sensitive DUTs
- Acquisition rate of up to 500,000 samples per second to capture extremely fast variations in voltage or current
- High accuracy and readings with up to 6½ digit resolution
- Two quadrants: operation as a source or sink
- Battery simulation

### Your benefit | Features
---|---
Optimized load recovery time with minimal overshoot | Featuring optimized load recovery time of < 30 µs, the R&S®NGM200 power supplies can handle abrupt load changes from a few µA to the ampere range without creating voltage drops or overshoots.

Low ripple and noise | Make it possible to supply interference-free voltage to sensitive designs, such as complex semiconductors, and to support the development of power amplifiers and MMICs.

High-speed acquisition (FastLog functionality) | With an acquisition rate of up to 500 ksamples/s, voltage and current results are available every 2 µs. On the R&S®NGM202, data acquisition can be performed on both channels in parallel.

Battery simulation | The battery simulator function of the R&S®NGM200 makes it possible to simulate the real battery output performance. Testing can be based on a selected battery model, while battery capacity, SoC and Voc can be set to any state to test the device under specific conditions.

---

**Parameter** | R&S®NGM201/NGM202 | Keithley 2281S
---|---|---
Number of channels | 1 / 2 | 1
Output voltage per channel | 0 V to 20 V | 0 V to 20 V
Max. output power per channel | 60 W | 120 W
Max. output current per channel | ≤ 6 V output voltage: 6 A > 6 V output voltage: 3 A | 6 A
Max. sink current per channel | 3 A | 1 A
Adjustable output impedance | 50 mΩ to 100 Ω | not specified
Voltage ripple and noise (20 Hz to 20 MHz) | < 500 µV (RMS) | < 1 mV (RMS)
| < 2 mV (peak-to-peak) | < 6 mV (peak-to-peak)
Current ripple and noise (20 Hz to 20 MHz) | < 1 mA (RMS) | < 3 mA (RMS)
Load recovery time (20 mV) | < 30 µs | < 50 µs
Programming resolution | 1 mV / 0.1 mA | 1 mV / 0.1 mA
Max. readback resolution | 10 µV / 10 nA | 100 µV / 10 nA
Readback accuracy, voltage | 20 V range: < 0.02 % + 2 mV 5 V range: < 0.02 % + 500 µV | < 0.02 % + 2 mV
Readback accuracy, current | 10 A range: < 0.05 % + 250 µA 1 A range: < 0.05 % + 1 mA 100 mA range: < 0.05 % + 100 µA 10 mA range: < 0.05 % + 15 µA | 10 A range: < 0.05 % + 250 µA 1 A range: < 0.04 % + 250 µA 100 mA range: < 0.04 % + 10 µA 10 mA range: < 0.04 % + 10 µA
Max. measurement speed | 500,000 sample/s (2 µs) | 6½ digit: 20 readings/s 3½ digit: 845 readings/s
Protection functions | OCP / OVP / OPP / OTP | OCP / OVP / OTP
Display | 5", 800 x 480 pixel WVGA, capacitive touchscreen | 4.3", 480 x 272 pixel, TFT LCD
Dimensions (W x H x D) | 222 mm x 97 mm x 436 mm | 255 mm x 107 mm x 415 mm
Weight | 7.1 kg / 7.3 kg | 10.85 kg

For more information, visit [www.rohde-schwarz.com/catalog/ngm200](http://www.rohde-schwarz.com/catalog/ngm200)
### R&S®NGM200 series vs. Keithley 2281S

**R&S®NGM200 series:**
- 2 instruments, 1 or 2 channels
- Output power: 60 W per channel
- Output voltage: 0 V to 20 V per channel
- Max. sink current: 3 A per channel

**Keithley 2281S:**
- Single-channel instrument
- Output power: 120 W
- Output voltage: 0 V to 20 V
- Max. sink current: 1 A

### Display size

**R&S®NGM200 series:**
The very large display with 800 × 480 pixel resolution makes it easy to read results even from a distance. Information such as power values and statistics can be displayed in addition. Icons indicate the status of selected protection and special functions.

**Keithley 2281S:**
4.3” display with 470 × 272 pixel resolution; capability to generate graphs.

### Source and sink and 6½ digit resolution

A resolution of up to 6½ digits is perfect for characterizing DUTs that have low power consumption in standby mode and high current in full load operation. The R&S®NGM200 power supplies automatically switch between source and sink mode. A negative current reading indicates that the instrument operates as a load.

### Battery simulation

**R&S®NGM200 series:**
- Discharging tests: Based on a selected battery model, the battery capacity, SoC and Voc can be set to any state.
- Charging tests: Similar to discharging tests; here, the R&S®NGM200 operates in sink mode.
- Dynamic simulation: Voc, ESR and SoC change according to charging/discharging conditions like a real battery. SoC is shown graphically; other values numerically.

**Keithley 2281S:**
- Discharging and charging tests: similar to R&S®NGM200.
- Single-channel instrument: The Keithley 2281S can run a charging or a discharging test, while the R&S®NGM202 can run both tests in parallel using the second channel.
- Graphs: Built-in graph function simplifies analyzing trends and displaying voltage and current waveforms.

### Large touchscreen – new standard for power supplies

The large capacitive touchscreen is the central operating element on the R&S®NGM200. Lightly tapping a numerical value will display a virtual keyboard to enter the desired value. Alternatively, the rotary knob can be used to set voltage and current values as well as limits for the various protection functions.