



Power supplies from Rohde & Schwarz – a selection

The right power supply for the right application



ROHDE & SCHWARZ

Mobile radio

Virtually all T & M applications require a suitable power supply unit to supply the DUT. For this purpose, Rohde & Schwarz provides a wide range of laboratory power supplies that are tailored to a variety of uses and whose features are adapted to the application at hand.

Besides general-purpose power supply units, Rohde & Schwarz provides power supplies for the mobile radio, component testing and automotive fields. This equipment features specific characteristics that have been specially optimized to meet the requirements of the particular application.

This brochure gives you an overview of important units and makes it easier to choose the right power supply for the right application. Additional power supplies from the wide selection of Rohde & Schwarz products can be found at www.rohde-schwarz.com.

During normal operation, mobile terminals are powered by batteries or accumulators. The electrical characteristics of these power storage components, however, are charge- and temperature-dependent and are subject to aging. To create reproducible supply conditions or simulate limit conditions in the development, production and servicing of mobile terminals, the batteries are replaced by suitable laboratory power supply units that must fulfil special requirements. The combination of low supply voltages, strong dynamic load fluctuations in the μs range (e.g. GSM transmission burst) and the necessity to be able to read back minimum currents (e.g. standby currents) place demands on the power supply which can only be met by units with special characteristics.

All power supply units from Rohde & Schwarz feature the following:

- ◆ High-resolution voltage setting
- ◆ Minimum ripple and noise
- ◆ Fast remote sensing capability
- ◆ Usable in mobile phone production/development/servicing

In addition, they exhibit outstanding device-specific characteristics for use in mobile radio.



R&S® NGM01/R&S® NGM02

Single-/Dual-Channel Analyzer/ Power Supply – More than just a power supply

Key features

- ◆ One/two channel(s) (R&S®NGM01/ R&S®NGM02) 15 V/2.5 (5) A with 7 A peak
- ◆ Fast load regulation
- ◆ Internal/external triggers
- ◆ Sample buffer for fast current and voltage measurements
- ◆ Sinking to 2.8 A (static)
- ◆ Precise measurement in μA range
- ◆ Adjustable output impedance for battery emulation
- ◆ Overvoltage protection, overcurrent protection (OVP, OCP)
- ◆ Convenient manual operation

Typical applications

- ◆ Error detection in mobile phones
- ◆ Evaluation of operating time in different modes
- ◆ Setup of optimum network transmission parameters
- ◆ Charger tests (R&S®NGM02)
- ◆ Mobile phone development/production/servicing



R&S® NGPQ32/6

Programmable Power Supply

Key features

- ◆ One channel (48 W) with supply range of 0 V to max. 32 V/0 A to max. 6 A
- ◆ Two measurement ranges: 0 A to 6 A with 100 μ A resolution, 0 mA to 100 mA with 1 μ A resolution
- ◆ Optimized transient response for mobile phones
- ◆ Settable overvoltage, overcurrent and soft limits
- ◆ Intelligent status indication
- ◆ Convenient manual and remote operation

Typical applications

- ◆ Mobile phone development
- ◆ Mobile phone servicing



R&S® NGSM32/10

Programmable Power Supply

Key features

- ◆ Output: 0 V to max. 32 V/0 A to max. 10 A (20 A)
- ◆ Optimized transient response for GSM mobile phones
- ◆ Simple arbitrary generator included
- ◆ Easy operation
- ◆ Up to 100 μ A current read-back resolution

Typical applications

- ◆ Mobile phone development
- ◆ Mobile phone production
- ◆ Mobile phone servicing



R&S® NGPL6/5

Programmable Four-Channel Power Supply

Key features

- ◆ Four channels, max. 0 V to 6 V/0 A to 5 A/30 W
- ◆ Remote operation by IEEE 488.2 interface and RS-232-C
- ◆ Optional terminal software for stand-alone operation, maintenance and firmware updates
- ◆ Optimized transient response for GSM mobile phones
- ◆ Favorable price

Typical application

- ◆ Mobile phone production (esp. for software downloads, radiation tests, final assembly tests)

Component testing

In component testing, it is important that electronic components are supplied quickly, reliably and with high resolution. Since minimum currents/voltages must be supplied/measured, an extremely low-noise source is required. In addition, a very wide range of electrical characteristics must be measured or behavior under stress situations must be determined. If components are measured in early phases (without encapsulation or cooling), only pulsed supply operation may be permissible. The power supply units listed on the following pages integrate many of these characteristics. All units (except those of the R&S®NGT series) feature IEC/IEEE bus remote control.



R&S® NGM01/R&S® NGM02

Single-/Dual-Channel Analyzer/Power Supply – The all-purpose solution – More than just a power supply

Key features

- ◆ One/two channel(s) (R&S®NGM01/R&S®NGM02) 15 V/2.5 (5) A with 7 A peak
- ◆ Current resolution: 1 mA (setting), 100 nA (measurement)
- ◆ Voltage resolution: 1 mV (setting), 1 mV (measurement)
- ◆ OVP, OCP
- ◆ Fast load regulation
- ◆ Internal/external triggers
- ◆ Inhibit input
- ◆ Sample buffer for fast current and voltage measurements
- ◆ Sinking capability to 2.8 A (static)
- ◆ Digital voltmeter (DVM) input
- ◆ Adjustable output impedance for battery emulation

Typical applications

- ◆ (Pulsed) power amplifier test
- ◆ Charger tests (R&S®NGM02 only)
- ◆ Parameter test on electronic devices



R&S® NGPX Family

Programmable High-Speed Power Supply

Key features

- ◆ Three models: 35 V/10 A, 70 V/5 A, 150 V/2.3 A; 350 W output power
- ◆ Convenient IEEE 488.2 programming
- ◆ Rear trigger input
- ◆ Current monitor with current measurements up to 25 μ A resolution (opt.)
- ◆ Active downprogramming
- ◆ OVP

Typical application(s)

- ◆ High-throughput system power supply
- ◆ Power ramp simulations
- ◆ Efficiency measurements on RF power amplifier



R&S® NGPT

Programmable Triple Power Supply

Key features

- ◆ Output: 2 × 0 V to 35 V/0 A to 1 A, 1 × 0 V to 7 V/0 A to 5 A
- ◆ Remote sensing (0.5 V per load)
- ◆ Soft limits for defined voltage and current limiting

Typical application

- ◆ Universal low-noise supply



R&S® NGT

Triple Power Supply

Key features

- ◆ Three models:
R&S® NGT 35: 2 × 0 V to 35 V/0 A to 0.6 A, 1 × 0 V to 6 V/0 A to 5 A
R&S® NGT 25: 2 × 0 V to 25 V/0 A to 0.8 A, 1 × 0 V to 6 V/0 A to 5 A
R&S® NGT 20: 2 × 0 V to 20 V/0 A to 1 A, 1 × 0 V to 6 V/0 A to 5 A
- ◆ OVP for 6 V channel
- ◆ Tracking operation
- ◆ Short-circuit-proof

Typical application

- ◆ General-purpose laboratory power supply



R&S® NGPS32

Programmable Dual Bipolar Voltage Source

Key features

- ◆ Two channels: -32 V to +32 V with 500 μV resolution each
- ◆ Selectable current limit (100 mA or 10 mA)
- ◆ Two integrated simple arbitrary generators
- ◆ High thermal and long-term stability
- ◆ Floating output voltages, combinable
- ◆ Rear outputs with additional sensing connectors
- ◆ Ease of operation

Typical applications

- ◆ Programmable reference voltage source



Advantest R6243/R6244¹⁾

DC Voltage/Current Source/Monitor

Key features

- ◆ **R6243:**
0 V to max. ±110 V/0 V to max. ±2 A
- ◆ **R6244:**
0 V to max. ±20 V/0 V to max. ±10 A
- ◆ Sink-enabled bipolar output
- ◆ Minimum pulse width: 1 ms
- ◆ Linear/logarithmic and random sweep and pulse sweep functions

- ◆ Limiter (compliance), oscillation, overload and overheat detection functions
- ◆ Synchronous operation function by combining two or more units

Typical applications

- ◆ Transistor, FET and (photo-)diode characteristics test
- ◆ Battery charge and discharge tests
- ◆ DC/DC converter characteristics test
- ◆ Latch-up tests on CMOS ICs
- ◆ Go/Nogo components evaluation
- ◆ Calibration reference source



Advantest R6240A¹⁾

DC Voltage/Current Source/Monitor

Key features

- ◆ Pulse generation by means of internal waveform generator
- ◆ Individual settings of HI and LO limiters
- ◆ Suspend function for selecting different output states
- ◆ Measuring accuracy of 5½ digits, resolution of 10 μV and 10 nA
- ◆ Source/sink of ±4 A for a maximum period of 20 ms
- ◆ Resistance measurement under constant voltage source or constant current source

Typical applications

- ◆ Battery charge/discharge tests
- ◆ Charger tests with HiZ mode
- ◆ Power supply unit evaluation
- ◆ Measuring ON resistance of MOSFET and analog switches
- ◆ Power consumption tests

¹⁾ Distributed only in Europe and selected countries.

Automotive

Automotive applications typically provide maximum power output at the lowest possible price. The characteristic 12 V, 24 V and 42 V vehicle supply voltages with their permissible tolerance ranges must be reliably supplied. Frequently large currents flow via extended lines (production systems). For this reason, power supply units must recognize and reliably eliminate voltage losses in these lines. Sensing connectors are required for this purpose. Noise characteristics play a subordinate role, since noise is heavily superimposed on the vehicle supply system. The ability to simulate strong interference is therefore a major factor in choosing the right power supply for automotive applications. A small selection of suitable Rohde & Schwarz power supplies is provided on the following pages. All the power supplies listed in the following allow remote sensing.



R&S® NGPE35/40
R&S® NGPE70/20

Programmable DC Power Supply

Key features

- ◆ **R&S® NGPE35/40:**
0 V to 35 V/0 A to 40 A (1400 W)
- ◆ **R&S NGPE70/20:**
0 V to 70 V/0 A to 20 A (1400 W)
- ◆ Manual setting of values for voltage and power or via an IEEE 488 interface
- ◆ Monitoring functions, e.g. alarms for thermal overload, failure of power unit, etc
- ◆ Good efficiency (switched mode regulator)
- ◆ Active power factor correction

Typical applications

- ◆ Supply of car electronic components (high-current devices)



R&S® NPGE40/40

Programmable Power Supply

Key features

- ◆ 0 V to max. 40 V / 0 A to max. 40 A (800 W)
- ◆ Good regulation characteristics
- ◆ Wide AC supply regulation range: 190 V to 265 V/95 V to 135 V
- ◆ Separate panel meters for voltage and current
- ◆ High resolution and reproducibility
- ◆ High setting speed
- ◆ OVP
- ◆ IEEE 488 interface

Typical applications

- ◆ Supply of vehicle electronic components (high-current devices)



R&S® NGSM32/10 R&S® NGSM60/5

Programmable DC Power Supply

Key features

- ◆ R&S® NGSM32/10:
0 V to 32 V max./0 A to max. 10 A/160 W
- ◆ R&S® NGSM60/5:
0 V to 60 V max./0 A to max. 5 A/160 W
- ◆ Simulation of motor startup
- ◆ Currents up to 20 A, voltages up to 60 V for 42 V power network in motor vehicles
- ◆ Storage of up to 12 device setups for short test
- ◆ Large LED display
- ◆ Ease of operation
- ◆ IEEE 488 or RS-232-C interface (optional)

Typical applications

- ◆ Car electronics tests (central locking, airbag, seat adjustment, car phone, engine timing, alarm system, ABS control, electric window, laptop)
- ◆ Car audio (car radio)



R&S® NGPX35/10

High-Speed Power Supply

Key features

- ◆ 0 V to 35 V/0 A to 10 A/350 W
- ◆ Linear regulation
- ◆ Fast up- and downprogramming
- ◆ Effective current measurement with dynamic loads
- ◆ Nonvolatile storage of 10 complete instrument setups
- ◆ OVP
- ◆ Soft limits for current and voltage
- ◆ Rear trigger input
- ◆ IEEE 488.2 interface

Typical application

- ◆ Test of insensitivity to power dropouts



R&S® NGAS

Single Power Supply – 160 W compact model

Key features

- ◆ 0 V to max. 32 V/0 A to max. 10 A
- ◆ High surge capability, twice the rated current can be drawn for short periods
- ◆ Separate meters for voltage and current
- ◆ Suitable for mobile use

Typical applications

- ◆ Battery replacement
- ◆ General laboratory applications
- ◆ Car electronics tests



R&S® NPGV20/10 with option R&S® MOD100

Programmable Power Supply

Key features

- ◆ 0 V to 20 V/0 A to 10 A/200 W
- ◆ No discrete output capacitance, true current source
- ◆ Short setting time (current sinking)
- ◆ Programmable via IEC/IEEE bus and manual control
- ◆ Two current ranges – high-resolution current monitoring output
- ◆ Sine modulation of output voltage up to 50 kHz

Typical applications

- ◆ General laboratory applications
- ◆ Use in test systems
- ◆ Superimposition of vehicle supply with swept sine (R&S® MOD100)



R&S® NGB/NGBI

Single Power Supply – 350 W bench models

Key features

- ◆ 0 V to 35 V/0 A to 10 A
- ◆ High-resolution ten-turn potentiometer for voltage and current
- ◆ Surge current capability – several times the rated current may be drawn for short periods

Typical applications

- ◆ Vehicle electronics tests (for incandescent lamps, blinkers, voltage converters)
- ◆ General laboratory applications



Advantest R6244¹⁾

DC Voltage/Current Source/Monitor

Key features

- ◆ 0 V to max. ± 20 V/ 0 A to max. ± 10 A
- ◆ Sink-enabled bipolar output
- ◆ Minimum pulse width: 1 ms
- ◆ Linear/logarithmic, random sweep and pulse sweep functions
- ◆ Limiter (compliance), oscillation, overload and overheat detection functions
- ◆ Synchronous operation function by combining two or more units
- ◆ GPIB for automatic measuring system

Typical application(s)

- ◆ Pulsed high-current injection in vehicle electronics (ABS control)
- ◆ Pulsed current source to control magnetic coils
- ◆ ASICs for injection pump control
- ◆ Airbag inflators tests

¹⁾ Distributed only in Europe and selected countries.

General purpose

In applications with laboratory power supplies, it is important to stably supply the DUT with reproducible operating voltage and to protect it from being destroyed due to possible malfunctions. Furthermore, it is often helpful to instantly display the current actually consumed by the DUT. The laboratory power supply should be designed for all-round use yet be easy to operate. Rohde & Schwarz offers a wide range of power supply units that do not merely meet the basic requirements but provide highly precise, reliable and robust solutions. You can thus concentrate on your test and measurement work, without having to deal with problems caused by inefficient power supplies.

Power supply units from Rohde & Schwarz are typically used in the following areas:

- ◆ Education (universities, etc)
- ◆ Mechanical engineering
- ◆ Military applications (army, navy)
- ◆ Network operators
- ◆ Service stations
- ◆ Governmental organizations (e.g. fire departments, federal railways)

The following features are essential to the all-round use of these units:

- ◆ Ruggedness
- ◆ Good control characteristics
- ◆ High MTBF
- ◆ Low output noise
- ◆ Low electromagnetic interference (EMI)
- ◆ Ease of operation

Designation, applications	Type
Universal constant current and constant voltage sources	R&S®NGM7.5, R&S®NGM15, R&S®NGM35, R&S®NGM70, R&S®NGM280
Same as R&S®NGM, but double output current	R&S®NGK15, R&S®NGK35, R&S®NGK70, R&S®NGK280
Constant voltage sources with adjustable current limiting	R&S®NGA7.5, R&S®NGA15, R&S®NGA35, R&S®NGA70
Same as R&S®NGA, high surge capability	R&S®NGAS32/10
Constant voltage sources with adjustable current limiting	R&S®NGB32, R&S®NGB70, R&S®NGBI35, R&S®NGBI70
Dual power supplies	R&S®NGMD35
Triple power supplies	R&S®NGL35, R&S®NGT20, R&S®NGT25, R&S®NGT35
Precision power supplies	R&S®NGRU35, R&S®NGRU50, R&S®NGRU100
Universal high-power supplies	R&S®NGC35, R&S®NGC70, R&S®NGRE6 to 100
Programmable power supplies	R&S®NGPU70/10, R&S®NGPU70/20
Programmable power supplies	R&S®NGPV8/10, R&S®NGPV20/5, R&S®NGPV20/10, R&S®NGPV40/3, R&S®NGPV40/5, R&S®NGPV100/1, R&S®NGPV100/2, R&S®NGPV300/0.3; R&S®NGPV300/0.6
Programmable power supplies	R&S®NGPX35/10, R&S®NGPX70/5, R&S®NGPX150/2.3
Programmable high-power supplies	R&S®NGPE40/40, R&S®NGPE35/40, R&S®NGPE70/20
Programmable voltage source with arbitrary function	R&S®NGPS32
Single-/dual-channel analyzer/power supply	R&S®NGM01, R&S®NGM02
Programmable triple power supplies	R&S®NGPT7, R&S®NGPT18, R&S®NGPT35
Programmable power supplies with arbitrary function	R&S®NGSM32/10, R&S®NGSM60/5
Programmable power supply	R&S®NGPQ32/6
Programmable quadruple system power supply	R&S®NGPL6/5

The Rohde & Schwarz power supply units are divided into three main groups (for more information, visit www.rohde-schwarz.com):

- ◆ Bench models with output power up to 350 W – eleven type series with a total of 29 basic models
- ◆ 19" models with up to 2000 W output power – two type series with 29 basic models
- ◆ System units/programmable power supplies with IEC 625-1/IEEE 488 bus – five type series



ROHDE & SCHWARZ

www.rohde-schwarz.com

Europe: +49 1805 12 4242, customersupport@rohde-schwarz.com

USA and Canada: 1-888-837-8772, customer.support@rsa.rohde-schwarz.com

Asia: +65 65 130 488, customersupport.asia@rohde-schwarz.com