

R&S®NGC100

Power Supply Series

Getting Started



1179164102
Version 01

ROHDE & SCHWARZ
Make ideas real



This manual describes the instruments of the R&S®NGC power supply series:

- R&S®101 Single-channel power supply 100W (3657.2288.02)
- R&S®101-G Single-channel power supply 100W GPIB (3657.2288.03)
- R&S®102 Two-channel power supply 100W (3657.2359.02)
- R&S®102-G Two-channel power supply 100W GPIB (3657.2359.03)
- R&S®103 Three-channel power supply 100W (3657.2413.02)
- R&S®103-G Three-channel power supply 100W GPIB (3657.2413.03)

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1179.1641.02 | Version 01 | R&S®NGC100

Throughout this manual, products from Rohde & Schwarz are indicated without the ® symbol , e.g. R&S®NGC100 is indicated as R&S NGC100.

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1 Safety and regulatory information

The product documentation helps you use the product safely and efficiently. Follow the instructions provided here and in the following chapters.

Intended use

The product is intended for the development, production and verification of electronic components and devices in industrial, administrative, and laboratory environments by personnel familiar with the potential risks of measuring electrical quantities.

Use the product only for its designated purpose. Observe the operating conditions and performance limits stated in the data sheet.

Target audience

Only connect, set up and use a power supply if you are an electrically skilled person. Electrically skilled persons have the relevant education and experience to enable them to perceive risks and to avoid hazards that electricity can cause.

This document targets at all users, including installers, operators, technicians, maintenance and service personnel.

Follow the safety instructions provided in [Chapter 1.1, "Safety instructions"](#), on page 6 and the additional information provided during setup or operation procedures.

Where do I find safety information?

Safety information is part of the product documentation. It warns you of potential dangers and gives instructions on how to prevent personal injury or damage caused by dangerous situations. Safety information is provided as follows:

- In [Chapter 1.1, "Safety instructions"](#), on page 6. The same information is provided in many languages as printed "Safety Instructions". The printed "Safety Instructions" are delivered with the product.
- Throughout the documentation, safety instructions are provided when you need to take care during setup or operation.

1.1 Safety instructions

Products from the Rohde & Schwarz group of companies are manufactured according to the highest technical standards. To use the products safely, follow the instructions provided here and in the product documentation. Keep the product documentation nearby and offer it to other users.

Use the product only for its intended use and within its performance limits. Intended use and limits are described in the product documentation such as the data sheet, manuals and the printed "Safety Instructions". If you are unsure about the appropriate use, contact Rohde & Schwarz customer service.

Only people skilled in electrical work should connect, set up and use the product. Such persons have the education and experience needed to recognize risks and avoid hazards of working with electricity. These users also need sound knowledge of at least one of the languages in which the user interfaces and the product documentation are available.

Reconfigure or adjust the product only as described in the product documentation or the data sheet. Any other modifications can affect safety and are not permitted.

Never open the casing of the product. Only service personnel authorized by Rohde & Schwarz are allowed to repair the product. If any part of the product is damaged or broken, stop using the product. Contact Rohde & Schwarz customer service at <https://www.rohde-schwarz.com/support>.

Lifting and carrying the product

Look up the maximum weight in the data sheet. A single person can only carry a maximum of 18 kg safely depending on age, gender and physical condition. If your product is heavier than 18 kg, do not move or carry it by yourself.

To move the product safely, you can use lifting or transporting equipment such as lift trucks and forklifts. Follow the instructions provided by the equipment manufacturer.

Choosing the operating site

Only use the product indoors. The product casing is not waterproof. Water that enters can electrically connect the casing to live parts, which can lead to electric shock, serious personal injury or death if you touch the casing.

Unless otherwise specified, you can operate the product up to an altitude of 2000 m above sea level. The product is suitable for pollution degree 2 environ-

ments where nonconductive contamination can occur. For more information on environmental conditions such as ambient temperature and humidity, see the data sheet.

Setting up the product

Always place the product on a stable, flat and level surface with the bottom of the product facing down. If the product is designed for different positions, secure the product so that it cannot fall over.

If the product has foldable feet, always fold the feet completely in or out to ensure stability. The feet can collapse if they are not folded out completely or if the product is moved without lifting it. The foldable feet are designed to carry the weight of the product, but not an extra load.

If stacking is possible, keep in mind that a stack of products can fall over and cause injury.

If you mount products in a rack, ensure that the rack has sufficient load capacity and stability. Observe the specifications of the rack manufacturer. Always install the products from the bottom shelf to the top shelf so that the rack stands securely. Secure the product so that it cannot fall off the rack.

Connecting to power

The product is an overvoltage category II product. Connect the product to a fixed installation used to supply energy-consuming equipment such as household appliances and similar loads. Keep in mind that electrically powered products have risks, such as electric shock, fire, personal injury or even death. Replace parts that are relevant to safety only by original parts, e.g. power cables or fuses.

Take the following measures for your safety:

- Before switching on the product, ensure that the voltage and frequency indicated on the product match the available power source. If the power adapter does not adjust automatically, set the correct value and check the rating of the fuse.
- If a product has an exchangeable fuse, its type and characteristics are indicated next to the fuse holder. Before changing the fuse, switch off the product and disconnect it from the power source. How to change the fuse is described in the product documentation.
- Only use the power cable delivered with the product. It complies with country-specific safety requirements. Only insert the plug into an outlet with protective conductor terminal.

- Only use intact cables and route them carefully so that they cannot be damaged. Check the power cables regularly to ensure that they are undamaged. Also ensure that nobody can trip over loose cables.
- Only connect the product to a power source with the safety fuse specified in the data sheet.
- Ensure that you can disconnect the product from the power source at any time. Pull the power plug to disconnect the product. The power plug must be easily accessible. If the product is integrated into a system that does not meet these requirements, provide an easily accessible circuit breaker at the system level.

Working with hazardous voltages

Voltages higher than 30 V RMS, or 42 V peak, or 60 V DC are regarded as hazardous contact voltages. Direct contact with them can cause serious injuries.

When working with hazardous contact voltages, use protective measures to preclude direct contact with the measurement setup:

- Before each measurement, inspect all components for damage and replace them if necessary.
- Do not touch exposed connections and components when power is applied.
- Casing, chassis and all measuring terminals are connected to a grounding connection. Never disconnect a grounding connection on the product.
- Switch off the power before connecting or disconnecting the terminal block to the rear panel connector. Tighten all wires connected to the terminal block.
- Only use the wires and terminal blocks delivered with the product.
- Only use insulated wires, not stripped wires, for the terminal connections.
- Turn the mains switch off when the product is not in use.
- When operating measuring accessories, only use the cables delivered with the accessory. If you have to use cables from other manufacturers, make sure that they are of the required overvoltage category.

Do not operate the product in series or parallel unless that setup is supported. If accessories are provided for a product, only use them for that product. See the data sheet.

In series or parallel setups, protect yourself against electric shock before connecting access ports such as the Ethernet port or the USB port using one of the following measures:

- Ensure that all products are grounded by connecting them to the AC power.
- Disconnect all power connections to the product, including outputs.

Measurement categories

IEC 61010-2-030 defines measurement categories that rate products on their ability to resist short transient overvoltages that occur in addition to the working voltage.





This product is designed for measuring within measurement category 0 only. Measurements in this category are performed on circuits not directly connected to mains, such as electronics, battery powered circuits, and specially protected secondary circuits. This measurement category is also known as CAT I.

Cleaning the product

Use a dry, lint-free cloth to clean the product. When cleaning, keep in mind that the casing is not waterproof. Do not use liquid cleaning agents.

Meaning of safety labels

Safety labels on the product warn against potential hazards.

	Potential hazard Read the product documentation to avoid personal injury or product damage.
	Electrical hazard Indicates live parts. Risk of electric shock, fire, personal injury or even death.
	Hot surface Do not touch. Risk of skin burns. Risk of fire.
	Protective conductor terminal Connect this terminal to a grounded external conductor or to protective ground. This connection protects you against electric shock if an electric problem occurs.

1.2 Labels on R&S NGC100






Labels on the casing inform about:

- Personal safety, see "[Meaning of safety labels](#)" on page 9.
- Product and environment safety, see [Table 1-1](#).

Warning messages in the documentation

- Device information is provided on a sticker attached to the [rear panel](#) of R&S NGC100. The sticker contains a barcode and the device ID. The device ID is a combination of the order number and the serial number.

Table 1-1: Labels regarding R&S NGC100 and environment safety

	Labeling in line with EN 50419 for disposal of electrical and electronic equipment after the product has come to the end of its service life. For more information, see the product user manual, chapter "Disposal".
	Grounding terminal (earth ground contact)
	ON (supply voltage)
	OFF (supply voltage)
	Chassis grounding terminal

1.3 Warning messages in the documentation

A warning message points out a risk or danger that you need to be aware of. The signal word indicates the severity of the safety hazard and how likely it will occur if you do not follow the safety precautions.

DANGER

Imminently hazardous situation. Will result in death or serious injury if not avoided.

WARNING

Potentially hazardous situation. Could result in death or serious injury if not avoided.

CAUTION

Potentially hazardous situation. Could result in minor or moderate injury if not avoided.

NOTICE

Potential risks of damage. Could result in damage to the supported product or to other property.

1.4 Korea certification class A

이 기기는 업무용(A급) 전자파 적합기기로서 판매자 또는 사용자는 이 점을 주의하시기 바라며, 가정외의 지역에서 사용하는 것을 목적으로 합니다.

2 Documentation overview

This section provides an overview of the R&S NGC100 user documentation.

2.1 Manuals

You find the documents on the R&S NGC100 product page at:

www.rohde-schwarz.com/manual/ngc100

Getting started

Introduces the R&S NGC100 power supply series and describes how to set up and start working with the instrument. The printed document is delivered with the instrument.

User manual

Contains the description of all instrument modes and functions. It also provides an introduction to remote control, a complete description of the remote control commands with programming examples, and information on maintenance and instrument interfaces. Includes the contents of the getting started manual.

The *online version* of the user manual provides the complete contents for immediate display on the internet.

In addition to the user manual, there is a separate R&S HMEexplorer software user manual. This manual contains an overview of all supported instruments, information on how to set up R&S HMEexplorer and detailed description of individual software modules: SCPI terminal program with script function, EMC precompliance software, software for storing instrument settings and create screenshots, CSV software and EasyArb software.

Printed safety instructions

Provides safety information in many languages. The printed document is delivered with the product.

Application notes, application cards, white paper, etc.

Instrument security procedures manual

Deals with security issues when working with the R&S NGC100 in secure areas. It is available for download on the internet.

2.2 Data sheet

The datasheet contains the technical specifications of the R&S NGC100 power supply series. It also lists all options with their order numbers and accessories.

See www.rohde-schwarz.com/brochure-datasheet/ngc100

2.3 Calibration certificate

The document is available on <https://gloris.rohde-schwarz.com/calcert>. You need the device ID of your instrument, which you can find on a label on the rear panel.

2.4 Release notes, open source acknowledgment (OSA)

The release notes list new features, improvements and known issues of the current firmware version, and describe the firmware installation. The open source acknowledgment document provides verbatim license texts of the used open source software. It can also be read directly on the instrument.

See www.rohde-schwarz.com/firmware/ngc100

2.5 Application notes, application cards, white paper, etc.

These documents contain information about possible applications and background information on various topics:

www.rohde-schwarz.com/application/ngc100

2.6 Remote control driver

The instrument drivers enable remote control via the corresponding interfaces. The drivers and installation instructions are available for download on the product page at:

www.rohde-schwarz.com/driver/ngc100

3 Welcome to R&S NGC100

The one, two or three-channel power supply series are based on a classical transformer concept with linear regulators. This concept allows the instrument to achieve highest accuracy and lowest residual ripple.

Key features

All output channels of R&S NGC100 are galvanically isolated, floating and protected against overloading and short-circuit. Outstanding key features are:

- Parallel or serial connection to achieve higher voltage and current respectively
- Multi-purpose protection functions (FUSE, OVP, OPP) set separately for each channel
- Overtemperature protection function (OTP) against overheating for each channel
- Fuse link protection function against overcurrent for two or three-channel model
- EasyArb function for freely definable voltage and current sequences with a timeframe as short as 1 ms
- EasyRamp function to ramp up supply voltage within a defined timeframe of 10 ms to 10 s
- Sequencing starts of output channels and triggering input for starting and controlling of EasyArb function
- Various interfaces (USB, LAN (LXI), GPIB) for ease of remote connection
- Direct control of channel output voltage using analog input of 0 V to 5 V
- Sense control for each channel output

For more information, see the data sheet.

4 Preparing for use

Here, you can find basic information about setting up the product for the first time.

4.1 Lifting and carrying

See "[Lifting and carrying the product](#)" on page 6.

4.2 Unpacking and checking

1. Unpack the R&S NGC100 carefully.
2. Retain the original packing material. Use it when transporting or shipping the R&S NGC100 later.
3. Using the delivery notes, check the equipment for completeness.
4. Check the equipment for damage and loose parts.

If the delivery is incomplete or equipment is damaged, contact Rohde & Schwarz.

4.3 Choosing the operating site

Specific operating conditions ensure proper operation and avoid damage to the product and connected devices. For information on environmental conditions such as ambient temperature and humidity, see the data sheet.

For safety information, see "[Choosing the operating site](#)" on page 6.

Electromagnetic compatibility classes

The electromagnetic compatibility (EMC) class indicates where you can operate the product. The EMC class of the product is given in the data sheet.

- Class B equipment is suitable for use in:

Setting up the R&S NGC100

- Residential environments
- Environments that are directly connected to a low-voltage supply network that supplies residential buildings
- Class A equipment is intended for use in industrial environments. It can cause radio disturbances in residential environments due to possible conducted and radiated disturbances. It is therefore not suitable for class B environments. If class A equipment causes radio disturbances, take appropriate measures to eliminate them.

4.4 Setting up the R&S NGC100

Adequate air circulation must be ensured during operation. For continuous operation, a horizontal or inclined position (integrated stand) is preferable.

See also:

- ["Setting up the product"](#) on page 7
- ["Intended use"](#) on page 5

4.4.1 Placing the R&S NGC100 on a bench top

To place the product on a bench top

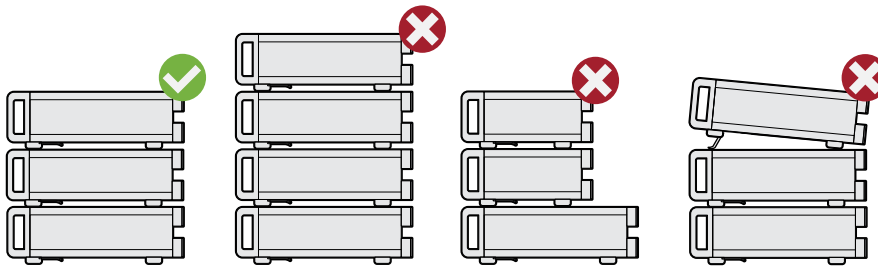
1. Place the product on a stable, flat and level surface. Ensure that the surface can support the weight of the product. For information on the weight, see the data sheet.
2. **CAUTION!** Foldable feet can collapse. For safety information, see ["Setting up the product"](#) on page 7.

Always fold the feet completely in or out. With folded-out feet, do not place anything on top or underneath the product.

3. **WARNING!** A stack of products can fall over and cause injury. Never stack more than three products on top of each other. Instead, mount them in a rack. Stack as follows:
 - If the products have foldable feet, fold them in completely.
 - All products must have the same dimensions (width and length).

Setting up the R&S NGC100

- Do not exceed a total load of 50 kg placed on the product at the bottom of the stack.



- Left = Stacked correctly
 Middle left = Stacked incorrectly, too many products
 Middle right = Stacked incorrectly, different dimensions
 Right = Stacked incorrectly, folded-out feet

4. **NOTICE!** Overheating can damage the product.

Prevent overheating as follows:

- Keep a minimum distance of 10 cm between the fan openings of the product and any object in the vicinity to provide sufficient airflow and ventilation.
- Do not place the product next to heat-generating equipment such as radiators or other products.

4.4.2 Mounting the R&S NGC100 in a rack

To prepare the rack

- Observe the requirements and instructions in ["Setting up the product"](#) on page 7.
- NOTICE!** Insufficient airflow can cause overheating and damage the product. The heat produced inside the instrument is guided to the exterior via temperature-controlled fan. The R&S NGC100 has multiple temperature sensors which check the heat generation in the instrument and control the fan speed. It is necessary to ensure that there is sufficient space around the instrument sides for heat exchange. Ensure that fan openings and ventilation holes are unobstructed and airflow vents are unimpeded. If the temperature inside the instrument increases more than the allowed limit, over-temperature protection is triggered and the affected outputs are switched off automatically.

To mount the R&S NGC100 in a rack

1. Use an adapter kit that fits the dimensions of the R&S NGC100 to prepare the R&S NGC100 for rack mounting.
 - a) Order the rack adapter kit designed for the R&S NGC100. For the order number, see data sheet.
 - b) Mount the adapter kit. Follow the assembly instructions provided with the adapter kit.
2. Lift the R&S NGC100 to shelf height.
3. Push the R&S NGC100 onto the shelf until the rack brackets fit closely to the rack.
4. Tighten all screws at the rack brackets with a tightening torque of 1.2 Nm to secure the R&S NGC100 at the rack.

To unmount the R&S NGC100 from a rack

1. Loosen the screws at the rack brackets.
2. Remove the R&S NGC100 from the rack.
3. If placing the R&S NGC100 on a bench top again, unmount the adapter kit from the R&S NGC100. Follow the instructions provided with the adapter kit.

4.5 Considerations for test setup

The product is built in compliance with DIN EN 61010-1 (VDC 0411 part 1), EN 61010-1 and IEC 61010-1. It is designed with the regulations of protection class 1, for supplying power-on circuits that are only indirectly connected to the low voltage mains or not connected at all.

The instrument is not intended for measurements within the measurement categories II, III or IV; the maximum potential against earth generated by the user must not exceed 250 VDC in this application.

See also "[Measurement categories](#)" on page 9.

General instrument specification

See [Table 4-1](#) for the general data on the instrument specification. Refer to the instrument datasheet for details.

Table 4-1: General data on instrument specification

Mains nominal voltage	AC	100 VAC to 240 VAC ($\pm 10\%$), 50 Hz / 60 Hz
Power consumption	Maximum input power	200 W
Mains fuses	100 V _{AC} to 240 V _{AC}	IEC 60127-2/5: T3.15H250V (fuse size: 5 mm x 20 mm)
Temperature	Operating temperature range	+5 °C to +40 °C
	Storage temperature range	-20 °C to +70 °C
Humidity	Non-condensing	5 % to 80 %
Display	-	3.5 " (QVGA)
Rack mount capability	-	19 " rack
Dimensions	W x H x D	97 mm x 222 mm x 291 mm (3.82 in x 8.74 in x 3.58 in)
Weight	R&S NGC101(-G)	2.6 kg (5.732 lb)
	R&S NGC102(-G)	
	R&S NGC103(-G)	

Operating limits

The R&S NGC100 is equipped with a protective overload feature. The protective overload feature prevents damage to the instrument and is intended to protect against a possible electrical shock. The maximum values for the instrument must not be exceeded. The protection limits are listed on the front panel of the R&S NGC100 to ensure safe operation of the instrument.

See [Table 4-2](#) for protection limits of the R&S NGC100.

Table 4-2: Protection limits for R&S NGC100

Specification	Limits	
Maximum output voltage	32 VDC	
Maximum output current	R&S NGC103(-G)	3 A
	R&S NGC102(-G)	5 A
	R&S NGC101(-G)	10 A
Maximum voltage against earth	250 VDC	
Maximum counter-voltage (same polarity)	33 VDC	
Maximum reverse voltage (opposite polarity)	0.4 VDC	

Specification	Limits
Maximum reverse current	3 A
Power supply	100 VAC to 240 VAC ($\pm 10\%$)
Frequency	50 Hz / 60 Hz
Maximum power output	100 W

Cable selection and electromagnetic interference (EMI)

Electromagnetic interference (EMI) can affect the measurement results.

To suppress electromagnetic radiation during operation:

- Use high-quality shielded cables, for example double shielded USB and LAN cables.
- Use at least a CAT6+ LAN cables with a length ≤ 3 m and passive USB cable with a length ≤ 1 m.
- Use insulated wires for output supply/terminal connections.
- Always terminate open cable ends.
- Ensure that connected external devices comply with EMC regulations.
- Check regularly that all cables, including power cables are in perfect conditions.

Signal input and output levels

Information on voltage levels is provided in the data sheet. Keep the voltage levels within the specified ranges to avoid damage to the product and connected devices.

See also "[Output terminals \(5\)](#)" on page 30.

4.6 Connecting to power

For safety information, see "[Connecting to power](#)" on page 7 and "[Working with hazardous voltages](#)" on page 8.

Before connecting the instrument to the mains, check whether the mains voltage conforms to the mains voltage range specified on the label located at the left of the [AC power connector](#).

The power supply module covers a wide power supply range and normally does not require adjustment. See [Table 4-1](#) for the supported mains voltage and the corresponding fuse types and ratings. If the power supply exceeds the permissible range, contact Rohde & Schwarz customer service.

1. Ground the R&S NGC100 using the ground terminal on the rear panel. See "[Ground terminal](#)" on page 23.
2. Plug the AC power cable into the AC power connector.
Use power cable that complies with the IEC 60320-1 standard.
3. Plug the AC power cable into a power outlet with ground contact.
The required ratings are listed next to the AC connector and in the data sheet.

Replacing the power fuse

By default, the R&S NGC100 is preloaded with a time lag fuse (IEC 60127-2/5: T3.15H250V). The fuse holder is located below the AC power connector.

1. Disconnect the product from the power source by removing the power cable from the power plug on the rear panel of the R&S NGC100.

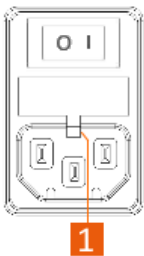



Figure 4-1: AC power connector

1 = Small notch of the fuse holder

2. Insert a flathead screwdriver in the small notch at the top of the fuse holder.
3. Lever out the fuse holder with the screwdriver.
4. Check the fuse rating on the caps of the fuse that you want to replace.
5. Once verified, insert the fuse into the groove of the fuse holder.
6. Return the fuse holder to its position in the panel.
The fuse holder is inserted against the spring pressure until it locks into place.

Ground terminal

If necessary, ground the instrument using the grounding connection  located at the [rear panel](#):

1. Unscrew the screw of the ground terminal using a cross-recess screw driver.
2. Attach a ground cable with a ring terminal and pass the screw through it.
3. Fasten the screw with a tightening torque of 1.2 Nm.
4. Connect the cable to ground.

4.7 Switching on or off



Specifications with tolerance data apply after a warm-up period of at least 30 minutes at a temperature of 23 °C (tolerance -3 °C / +7 °C).

See also [Chapter 4.6, "Connecting to power"](#), on page 21.

Switching on the product

The product is off but connected to power.

1. Set the switch on the power supply to position [I].
For the location of the switch, see [Chapter 5.2, "Rear panel"](#), on page 31.
The LED of the [Power] key is lighted red.

2. Press the [Power] key on the [front panel](#) of the R&S NGC100.

The LED of the [Power] key turns off.

The instrument performs a system check, boots the operating system and starts the R&S NGC100 firmware.

By default, the output channel is turned off when the instrument is switched on to prevent connected loads from being damaged unintentionally.

During startup, the R&S NGC100 is loaded with the last saved instrument settings. See "Store and Recall" in the user manual.

To shut down the product

- ▶ Press the [Power] key.

All current settings are saved and the operating system shuts down. The LED of the power key changes to red.

To disconnect from power

The product is in the standby state.

1. **NOTICE!** Risk of data loss. If you disconnect the product from power when it is in the ready state, you can lose settings and data. Shut it down first.
Set the switch on the power supply to position [0].
The LED of the [Power] key is switched off.
2. Disconnect the product from the power source.

4.8 Connecting to LAN

Establishing the LAN connection

The R&S NGC100 provides Ethernet (LAN) connectivity. Provided the corresponding rights are assigned, you can use these interfaces for remote control and data transfer from a controller PC. The controller PC must also be connected in the network.

The LAN connector is at the [rear panel](#) of R&S NGC100.

To connect R&S NGC100 to the LAN:

1. **NOTICE!** Recommendation on secure operation. The R&S NGC100 is designed to operate at local workplaces or in secured networks (LAN). It should not be accessible from the internet because of a potential security risk, e.g. attackers could misuse or damage your device.
Always install the latest firmware.
By default, the R&S NGC100 configuration uses DHCP that assigns the IP address automatically.
2. Connect the LAN socket using an RJ-45 cable to the LAN.
3. **NOTICE!** If the R&S NGC100 cannot obtain an IP address automatically, or cannot establish the connection, the "Link" status shows "no" in the [Figure 4-2](#).

Connecting USB devices

Possible reasons are that the LAN does not support DHCP or requires a specific TCP/IP configuration, or that the connection is missing.

To troubleshoot the problem, proceed as follows:

- a) Check if you have connected both, the R&S NGC100 and the controller PC to the LAN.
- b) Consult your network administrator to request support for an IP address, if necessary.
- c) If necessary, assign the IP address manually as described in chapter "LAN Connection" in the user manual.

If switched on and connected, the R&S NGC100 indicates the address information and LAN parameters in the Ethernet setting dialog. See [Figure 4-2](#).

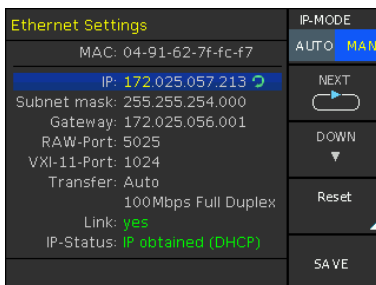


Figure 4-2: Ethernet settings dialog

4.9 Connecting USB devices

The USB Type-A connector is at the [front panel](#). You can connect or disconnect all USB devices from the R&S NGC100 during operation. But do not remove an external USB memory stick while the instrument is performing firmware update, data logging and storing of screen captures, since it leads to unsuccessful updates and loss of data.

To connect USB storage devices

USB storage devices, such as memory sticks, allow easy data transfer from or to the R&S NGC100. You can also use them for firmware updates.

- ▶ Connect the USB storage device to the USB type A connector.

Connecting USB devices

If you use the front panel connectors, connect the USB storage device directly, without connecting cable. Connecting cables can cause electromagnetic radiation and impair the measurement result.

5 Instrument tour

The following sections help you to get familiar with the instrument and perform the first steps:

- [Chapter 5.1, "Front panels"](#), on page 27
- [Chapter 5.2, "Rear panel"](#), on page 31

The sections explain the controls and connections on the front and rear of the R&S NGC100. For specifications of the interfaces, see the data sheet.

The meanings of the labels on the R&S NGC100 are described in [Chapter 1.2, "Labels on R&S NGC100"](#), on page 9.

5.1 Front panels

Depending on the instrument models, the number of channels and controls on front panel varies. The following front view description introduces each model individually. The function keys and navigation controls are located at the right side of the display with various output terminals located below the display and function keys.

Table 5-1: Power supply models

Power supply model	Number of output terminals
R&S NGC103(-G) (0 V - 32 V / 3 A)	6 x 4 mm safety socket output terminals (maximum 100 W output / 33 W per channel)
R&S NGC102(-G) (0 V - 32 V / 5 A)	4 x 4 mm safety socket output terminals (maximum 100 W output / 50 W per channel)
R&S NGC101(-G) (0 V - 32 V / 10 A)	2 x 4 mm safety socket output terminals (maximum 100 W output) with S+ and S- sense connectors for compensating the line resistance

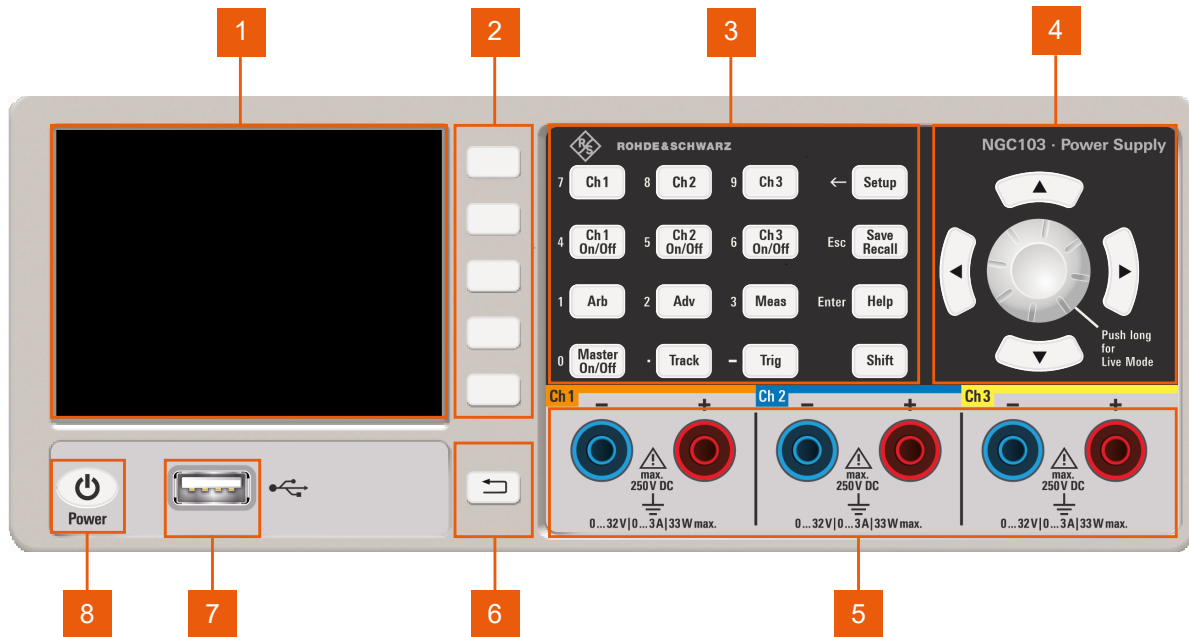


Figure 5-1: R&S NGC103(-G) front panel

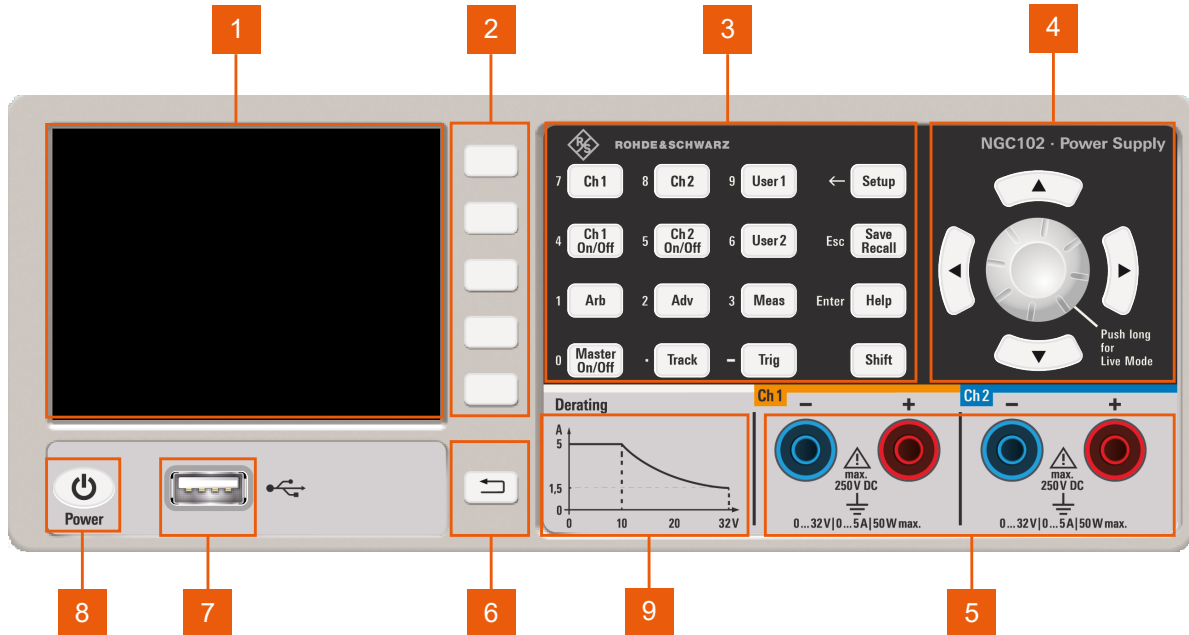


Figure 5-2: R&S NGC102(-G) front panel

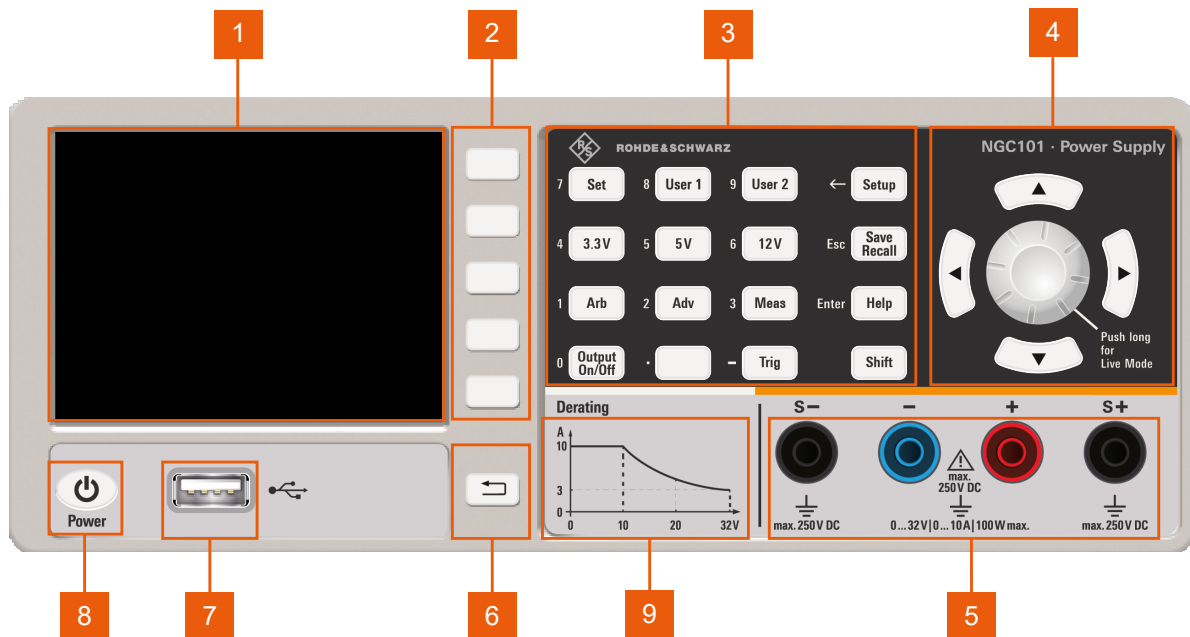


Figure 5-3: R&S NGC101(-G) front panel

- 1 = Display
- 2 = Interactive softkeys
- 3 = Function keys
- 4 = Navigation controls
- 5 = Output terminals
- 6 = Back key
- 7 = USB connector
- 8 = Power key
- 9 = Derating graph

Display (1)

The display is a color LCD screen. Depending on the instrument models, up to three channels are shown on the screen layout with different result fields are displayed. The respective measurement settings and functions are displayed in the individual channel section. There is a status bar at the top and bottom of each channel section to indicate the function used and operation modes of the instrument.

For a detailed description on-screen layout, see [Chapter 7.2.1, "Understanding the display information"](#), on page 39.

Interactive softkeys (2)

The interactive softkeys on the right of the display set the view of the measuring mode and provide access to submenus and functions.

The interactive softkeys are not illuminated.

If your instrument model does not support a specific operating mode, function or parameter, the access area to the interactive softkey menu is dimmed. See [Figure 7-4](#).

Function keys (3)

The function keys are means of input for manual operation of the instrument settings and functions. For detailed description on function keys, see chapter "Function keys" in the user manual.

Navigation control (4) (6)

The navigation controls include a rotary knob, arrow keys and [BACK] key. These keys are means of navigation and adjustment. When pressed or rotated, they perform tasks like navigation around the screen, adjustment of parameter values or confirmation of entries.

For detailed description on the navigation controls, see [Chapter 7.2, "Means of manual interaction"](#), on page 38.

Output terminals (5)

Depending on the instrument models, up to 6 x 4 mm safety sockets output terminals are available. See [Table 5-1](#).

USB connector (7)

USB Type-A connector is provided for connecting a USB flash drive to perform firmware update, data logging and store screen captures.

The USB flash drive file system supports a maximum capacity of up to 4GByte, FAT32 only. See also [Chapter 4.9, "Connecting USB devices"](#), on page 25.

Power key (8)

The [Power] key switches the instrument from the standby to the ready state or vice versa.

The LED of the [Power] key indicates the instrument state, see [Chapter 4.7, "Switching on or off"](#), on page 23.

Table 5-2: Power key state

Power key state	Descriptions
Power on, ready state.	The LED turns off. The instrument is ready for operation.
Power on, standby mode.	The LED turns red. The instrument is connected to power.
Power off or booting state.	The LED turns off during startup and operation, or when the instrument is not connected to the mains.

Derating Graph (9)

Imprinted on model R&S NGC101(-G) / R&S NGC102(-G), the derating graph shows the derating curve of current quoted as a function of voltage at maximum output power schematically.

For a detailed description, see chapter "Derating graph" in the user manual.

5.2 Rear panel

On the rear, the instrument models do not vary in design significantly. Therefore, the description refers to all models and points out existing differences.

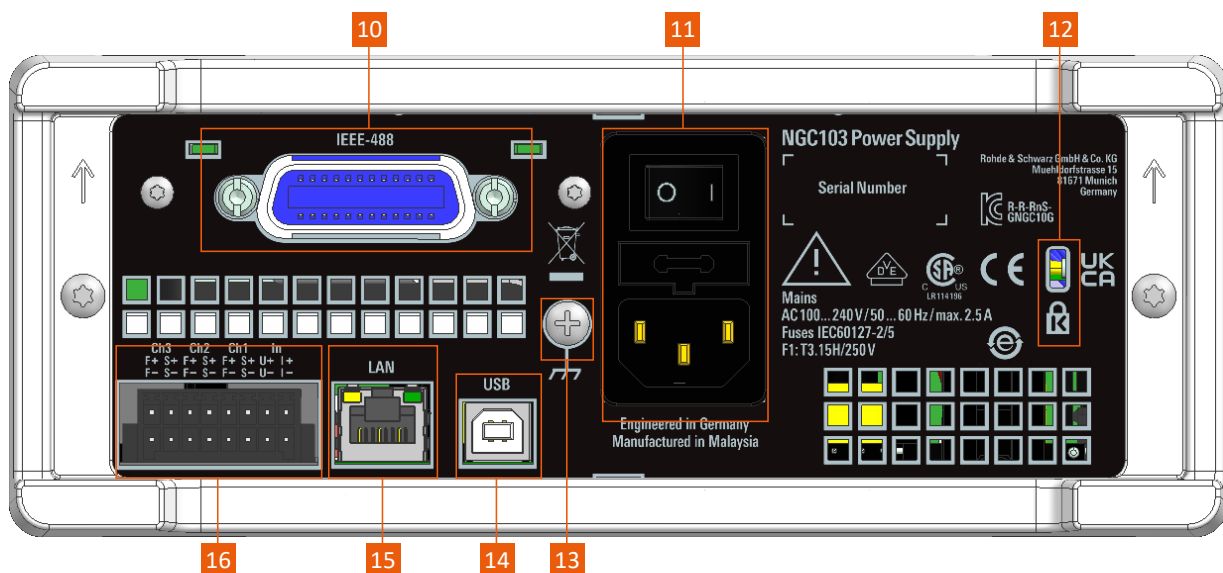


Figure 5-4: R&S NGC100 rear panel

- 10 = IEEE-488 (GPIB) interface
- 11 = AC power supply
- 12 = Kensington lock
- 13 = Ground terminal
- 14 = USB interface
- 15 = Ethernet (LAN) interface
- 16 = Rear panel connector

IEEE-488 (GPIB) interface (10)

Available with variant 03 model (i.e. 3657.xxxx.03), this general-purpose interface bus (GPIB) interface provides remote control of the instrument.

Use this interface to connect a computer for remote control of the R&S NGC100. To set up the connection, use high-quality shielded cables.

For more information, see chapter "Interfaces and protocols" in the user manual.

AC power supply (11)



Main supply cord

Use a detachable mains supply cord according to IEC60320-1 standard.

The power cable must be plugged in before signal circuits can be connected. Never use the product if the power cable is damaged.

Mains power supply with power switch, fuse holder and IEC socket.

- Mains power switch
Switch for connecting and disconnecting the internal power supply from the power source, see [Chapter 4.7, "Switching on or off"](#), on page 23.
- Fuse holder
Socket for the fuse securing the line voltage. The fuse is factory fitted. See ["Replacing the power fuse"](#) on page 22.
- IEC socket
Power supply connector for connecting the R&S NGC100 to the mains, see [Chapter 4.6, "Connecting to power"](#), on page 21.

Kensington lock (12)

A Kensington lock can be anchored to the R&S NGC100 power supply housing to secure it to a workstation mechanically.

Ground terminal (13)

Protective ground terminal to secure the R&S NGC100, e.g. with a ground external conductor, see [Chapter 1.2, "Labels on R&S NGC100"](#), on page 9.

USB connector (14)

The USB connector is a Type-B connector for remote control operation via USB TMC or USB VCP.

For more information, see chapter "USB connection" in the user manual.

Ethernet connector (15)

This RJ-45 connector is used for establishing remote control via SCPI. For more information on the connection setup, see [Chapter 4.8, "Connecting to LAN"](#), on page 24

Rear panel connector (16)

Rear panel outputs for integration into 19" rack systems.

NOTICE

Output terminals

Either the output terminals at the front panel or the rear panel connector at the back panel can be used.

Both terminals cannot be used at the same time as it can cause the instrument to malfunction.

Depending on the instrument models, the rear panel connector contains both output ("F+", "F-") and sense ("S+", "S-") connections for the supported channels. To connect lines, use the supplied plug-in terminal block connector which allows easy integration into 19" rack systems.

Available only for R&S NGC102(-G) and R&S NGC103(-G) models, the SENSE lines allow you to compensate voltage drops on the supply lines to the load so that the actual selected voltage is applied to the load.

The instrument automatically detects when the SENSE lines are connected and it regulates the output voltage directly at the load. If the SENSE lines are connected via S+ and S-, the display shows SENSE. The maximum compensation value of the lead resistances is 1 V.



Figure 5-5: Terminal block with connector assignment

F+ = Corresponds to + socket on the front panel

F- = Corresponds to - socket on the front panel

S+, S- = SENSE connectors

U+, U- = Voltage interface or external trigger input

I+, I- = Current interface

1. **DANGER!** Shock Hazard. Risk of electric shock if AC power is turned on when connecting wires to the rear panel connector.
Turn off AC power when connecting wires to the rear panel connector.
2. Insert shielded wire to the pluggable terminal block.
3. Tightened all the wires with the screw on the pluggable terminal block.
4. Connect the pluggable terminal block to the output terminal.

6 Trying out the instrument

This chapter describes some basic functions that you can perform with the R&S NGC100.

6.1 Selecting the channels

For R&S NGC102(-G) and R&S NGC103(-G) models, select a channel by pressing the corresponding channel key. The selected channel key illuminates.

6.2 Setting the output voltage and current limits

To set the output voltage and current limit via live-mode:

1. Long press the rotary knob to enter into editing mode.
By default, the voltage at channel 1 is selected.
2. Use arrow keys to select the desired parameter (voltage or current).
Selected voltage or current of the respective channel is highlighted.
3. Rotate the rotary knob to adjust value.
4. To exit live-mode, press the rotary knob.

Alternatively:

1. For R&S NGC102(-G) and R&S NGC103(-G) models, press the desired channel key (i.e. [Ch1]) on the front panel.
For R&S NGC101(-G) model, press [SET] key on the front panel.
The channel menu is displayed.
2. Press the respective softkey to set the voltage or current limit setting of the selected channel. The value on the selected channel becomes editable and is positioned by a white cursor.
All arrows keys on the navigation control are illuminated.
3. Press the [Left] / [Right] arrow key to move the cursor.

Activating the channel output

4. Press the [Up] / [Down] arrow key to change the value.
Alternatively, turn the rotary knob to change the value.
The new value registers immediately.
5. To directly set the numerical values, press the [Shift] key on the front panel.
The [Shift] key switches the function keys to a numeric keypad to change the value.

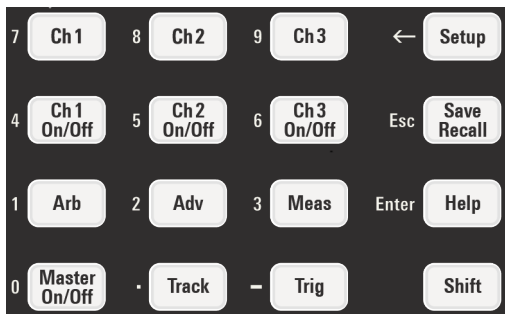


Figure 6-1: Numeric keypad

- a) Select a desired channel key followed by the softkey to set voltage or current limit ("U" or "I").
- b) Press [Shift] key.
The input entry field is displayed.
- c) Enter the desired value using the numeric keypad on the front panel. See [Figure 6-1](#).
- d) Press the respective softkey to confirm entry with the unit ("mV" or "V" for voltage and "mA" or "A" for current).
Alternatively, press the rotary knob to confirm entry with the default unit.
The new value registers immediately.

6.3 Activating the channel output

The output voltages can be switched on or off regardless of the operating mode of the instrument.

To activate the channel output, press the [Master On/Off] key on the front panel followed by the desired channel on/off key (i.e. [Ch 1 on/off]) or vice versa.

For R&S NGC101(-G) model, press the [Output On/Off] key to activate the channel output.

Storing/Recalling of instrument settings

Depending on the instrument operating mode, the display font color changes to green in CV (constant voltage) mode and red in CC (constant current) mode.

By default, the output is turned off when the instrument is switched on.

See also [Chapter 7.2.1.3, "Operating modes"](#), on page 43.

6.4 Storing/Recalling of instrument settings

The R&S NGC100 can store instrument settings and screenshots. Out of these data types, screenshots can only be stored on a USB stick. Instrument settings can be stored on a USB stick or internally in the instrument to non-volatile storage media.

1. Press [Save Recall] > "Device Settings" > "SAVE" key to store instrument settings.
2. Select the desired storage location, filename and comment (if any).
Default filename `SETxxxx` is used if no filename is entered where "xxxx" refers to the incremental index starting from "0001".
3. Confirm the selection by selecting the "SAVE" softkey.
The instrument settings are saved.
4. Press [Save Recall] > "Device Settings" > "LOAD" key to load or delete instrument settings.
5. Select the desired file location and filename.
The file manager dialog of the selected location is displayed.
6. Select "LOAD" to load the instrument settings.
The selected instrument settings are loaded.
7. Select "Delete file" to delete the instrument settings.
The selected instrument settings are deleted.

To retrieve the factory default settings, press [Save Recall] > "Device Settings" > "Default Settings" to load back the factory default settings.

7 Instrument control

This chapter provides an overview on how to work with the R&S NGC100. It introduces the possibilities for operating the instrument and describes the basic functionality of the control elements. If a measurement configuration requires specific operating steps, the corresponding settings description in the user manual points it out separately.

- [Ways to operate the instrument](#)..... 38
- [Means of manual interaction](#)..... 38
- [Remote control](#)..... 49

7.1 Ways to operate the instrument

You can operate an R&S NGC100 in two ways:

- Manual operation
Use the front panel controls to configure the R&S NGC100 settings.
See [Chapter 7.2, "Means of manual interaction"](#), on page 38 for basic information on manual operation of the instrument.
- Remote control
Create programs to automatize repeating settings, tests and measurements. A controller PC with remote access to the instrument runs the programs.
See [Chapter 7.3, "Remote control"](#), on page 49 for an overview of the interfaces provided for remote control.

7.2 Means of manual interaction

To configure the R&S NGC100 manually, use the front panel controls, see [Chapter 5.1, "Front panels"](#), on page 27. The display shows the current settings, menus and dialogs, when you perform your settings.


For manual interaction with the R&S NGC100, you have several methods that you can use as an alternative to perform a task:

- Function keys, interactive keys and menus



The front panel function keys followed by the corresponding interactive keys provide nearly all the functions and controls needed to operate the instrument. When selected, i.e. a function is active, the corresponding function key lights up in white.

You can access to the different instrument functions and parameters settings, operating modes and configure general instrument settings.

- Navigation controls

The navigation controls include a rotary knob, arrow keys ([Up], [Down], [Left], [Right]) and  [Back] key.

The arrow keys when lights up allow you to navigate on the channel display area or dialogs and menus to set parameters. The rotary knob when pressed acts like the [ENTER] key.

In menus, the  [Back] key returns the menu to the previous level or closes the menu from the first level. In the alphanumeric entry, the  [Back] key allows you to abort changes made in the entry field.

For basic instructions on how to control the R&S NGC100, see [Chapter 7, "Instrument control"](#), on page 38.

7.2.1 Understanding the display information

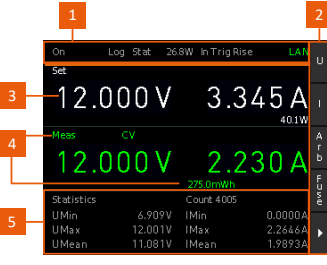
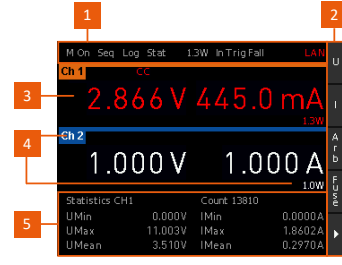
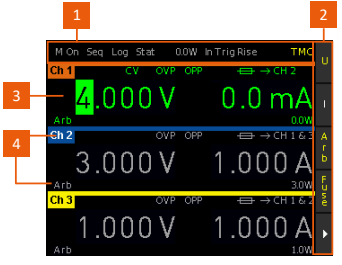
Depending on the instrument models, up to three channel display area are shown on the screen layout. Each channel display area displays the voltage, current values and the operating mode and functions of the output. For all models, the display shows a device status bar at the top of the display and the supported channel display area at the bottom. On the right-hand side of the screen layout, an interactive softkey menu set the view of measuring mode and provides access to the selected measurement functions and settings.

The result fields display on the screen layout depend on the instrument models:

- The statistic readings of minimum, maximum, mean and count values for voltage and current are displayed simultaneously on R&S NGC101(-G) and R&S NGC102(-G) models. For R&S NGC103(-G) model, the statistic function is available in the background and is accessed via the [MEAS] > "STATS" softkeys.
- For R&S NGC101(-G) model, the channel display area is divided into the section of "Set" and "Meas" (sense) display channel area. Below the "Meas" display channel area is the display of statistic readings of minimum, maximum, mean and count values for voltage and current.

For more information of statistic function, see "Statistic function" on page 43.

Table 7-1: Screen layout of R&S NGC100 models

R&S NGC101(-G)	R&S NGC102(-G)	R&S NGC103(-G)
		
<ul style="list-style-type: none"> • 1 = Device status bar • 2 = Interactive softkey menus (e.g. Track menu) • 3 = Channel display area • 4 = Channel status bar • 5 = Statistic function 		

The following sections explain the information areas as labeled.

7.2.1.1 Status bar information

There are two types of status bar information located in the screen layout:

- Device status
- Channel status

Device status

The device status bar indicates the master on/off status, the current power consumption and the state of the selected interfaces and functions.



Table 7-2: Device status bar information

Function	Description
"M On"	Master output state.
"M Off"	The instrument master output state to switch on the output supply.
"Seq"	Measurement function: Sequencing. Provides adjustable time offsets on consecutively connected channels when outputs are switched on (Master on/off).

Function	Description
"Log"	Measurement function: Data logging. Provides capturing and storage of measurement values.
"Stat"	Statistic reading of minimum, maximum, mean and count values for voltage and current.
<W>	Displays total power consumption.
"In TrigRise" "In TrigFall" "In An U" <%> "In An I" <%>	Signal input type and settings. The signal input type can be a trigger signal ("Rise" or "Fall") or an external analog input signal to control the output level of voltage ("U") or current ("I") in percentage <%>.
"LAN" "USB" "GPIB"	Remote control interface. Depending on instrument models, three different remote control interfaces are supported: LAN, USB ("VCP" or "TCM") and GPIB for remote operating of the instrument.




Channel status

The channel status displays the state of the indicators available in the device channel. It is shown at the top and bottom section of each channel display area.



Figure 7-1: Example of a three-channel power supply

Table 7-3: Channel status bar information

Indicator	Description
<Channel> "Set" and "Meas"	Channel number indication. Depending on instrument models supported, up to three channels ("Ch1", "Ch2", "Ch3") are displayed. For R&S NGC101(-G) model, the top channel display area displays the configured or "Set" voltage and current settings and the bottom channel display area displays the sense or "Meas" voltage and current settings. See Table 7-1 .
CV / CC	Instrument operating mode: CV (constant voltage), CC (constant current).
OVP / OPP	Indicator to show that the overload voltage or power protection is activated. When triggered, the indicator shows flashing and displays in red.
	Symbol indicates that the electronic fuse is activated. When the fuse is tripped, the symbol shows flashing and displays in red.
Fuse linking (e.g.  → CH2 & 3)	Depending on instrument models, up to two channels can be linked if a fuse tripped event occurs, e.g.  → CH2 & 3 can be linked to "Ch2" & "Ch3" for R&S NGC103(-G) model.
Arb	Program arbitrary output sequences.
In An	If activated, the instrument output (voltage or current) is externally controlled using voltage signal (0 V to 5 V analog input corresponds to 0 to V_{max} or I_{max}).
Ramp	If activated, output voltage to ramp continuously within a 10 ms to 10 s until the set voltage, V_{set} .
Energy meter (Wh)	If activated, it displays the energy released at the output in Ws.
Power	Displays maximum output power in watt.

7.2.1.2 Channel display area

The channel display area shows the voltage and current values and the corresponding mode (CC, CV) of the R&S NGC100 when the device output is turned

Means of manual interaction

on. See [Chapter 7.2.1.3, "Operating modes"](#), on page 43 for the different operating modes that the R&S NGC100 supported.

Statistic function

At the bottom of the screen layout is the display of statistic values (minimum, maximum, mean and count) for voltage and current for each channel. In the case of R&S NGC101(-G) and R&S NGC102(-G) models, the statistic values are only determined individually for each channel.

The R&S NGC103(-G) model does not allow the simultaneous display of the statistic values, it is run in the background. To access it, press [MEAS] > "STATS" to display the statistic menu to turn on/off or reset the display. The statistic values are determined individually for each channel.

For details, see chapter "Statistics" in user manual.

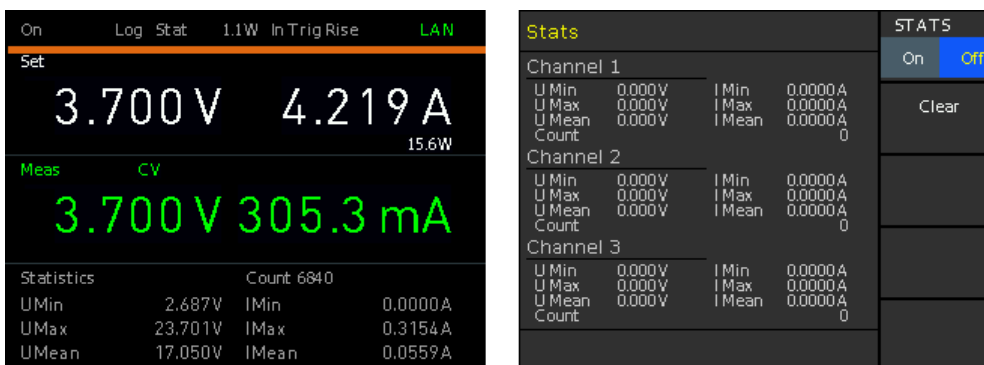


Figure 7-2: Statistic display of a R&S NGC101(-G) and R&S NGC103(-G) model

7.2.1.3 Operating modes

Different font colors on the screen are used to differentiate the various output status and operating conditions of the instrument. It is easy to know and confirm the different output status and operating conditions of the instrument by looking at the colors.

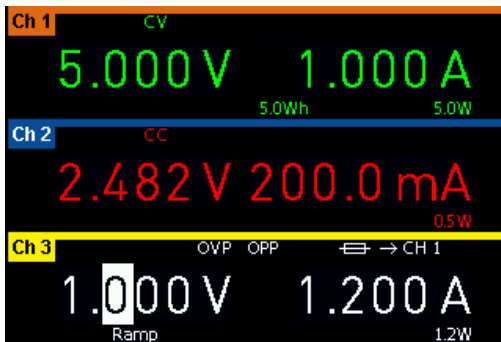


Figure 7-3: Color coding of difference operating conditions

Color	Operating mode	Description
□	OFF mode or editing mode	Output is OFF. In editing mode, a solid white cursor is shown when an item is selected.
■	CV mode	Active outputs are operated in a constant voltage mode. Label "CV" is displayed at the top left-hand corner below channel number.
■	CC mode	Active outputs are operated in a constant current mode. Label "CC" is displayed at the top left-hand corner below channel number.

7.2.1.4 Additional display characteristics

The following section provides a short insight on the indication of the screen in general for dialogs or settings.

- Appearance of active elements in dialogs or settings
 - Elements selected have a blue background. For unavailable settings of functions, the selection shows dimmed. See [Figure 7-4](#).
 - Parameters with a rotary icon indicate operation with rotary knob. Alternatively, you can use respective softkey for selection.

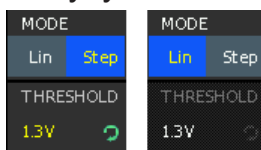


Figure 7-4: Appearance of active elements

Means of manual interaction

- Information indicated in red denotes that the setting is inactive or erroneous.
- "----" dashes on the display indicate that the R&S NGC100 could not determine a value.
- Menus and dialogs

Menu and dialogs are accessible via the correspond function key on the front panel followed by the respective interactive softkey. See [Chapter 5.1, "Front panels"](#), on page 27.

When pressed, the R&S NGC100 displays the menu of the selected function at the side of the screen display. See [Figure 7-5](#).

For more information on the function keys, see chapter "Menu Key" in the user manual.



Figure 7-5: Example of a menu selection (highlighted)

The term dialog refers to the views that cover the parameters of a certain function.

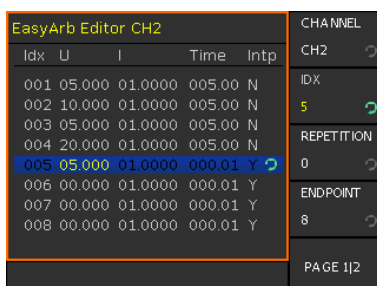


Figure 7-6: EasyArb editor dialog

- On-Screen keypad

The on-screen keypad appears if alphanumeric entry field is required. See [Chapter 7.2.3.2, "Entering alphanumeric parameters"](#), on page 49.

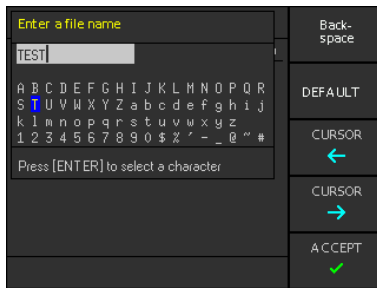


Figure 7-7: On-screen keyboard


- "Fallback" time, an adjustable time period:
When this time period has elapsed, the instrument either closes a setting dialog, returns to a previous dialog or assigns a certain setting automatically without having confirmed manually.
Settings in menus are not affected by the fallback time.
See the user manual, chapter "General instrument functions > Key brightness".

7.2.2 Accessing the functionality

All functionalities of the R&S NGC100 are provided by the corresponding function key followed by the interactive softkey on the front panel. This section provides an overview of the accessing methods. For detailed information, see chapter "Function Keys" in the user manual.

Apart from the main menu, we use the term "dialog" to refer the editable windows in the instrument.

To open the menu and submenu using interactive softkey

1. Press the desired function key followed by the corresponding interactive softkey at the front panel.
The respective instrument menu is displayed.
See [Figure 7-5](#).
2. Menu item with icon  (white arrow tag) at the bottom indicates that there is submenu available for selection.
Press the corresponding interactive softkey to go to submenu.
The submenu of the instrument is displayed.

To close or exit a dialog or menu

- ▶ Press  [Back] key at the front panel.

The instrument returns to previous menu level or exit the menu mode if it is already at the main menu level.

To select a parameter in a dialog

All except the arbitrary editor dialog have its parameters fixed at the softkey menu for selection. Use the respective softkey on the front panel for setting the parameters in the dialog.

For arbitrary editor dialog, the number of "ENDPOINT" indicates the available rows of data for selection. See [Figure 7-6](#).

1. Press the [UP] / [DOWN] arrow key to navigate the rows of data for selection.
2. Press the [LEFT] / [RIGHT] arrow key to navigate the items in the row for settings.
3. Rotates the rotary knob or use the numeric keypad ([SHIFT] key) to adjust settings.
4. Press the rotary knob (e.g. [ENTER] key) to confirm your selection.
5. To add more rows of data for editing, select the "ENDPOINT" softkey item to set the row.

To go into live-mode

In live-mode, the instrument automatically sets the voltage at channel 1 to editing mode. Duration of the live-mode depends on the key fallback time. Set a longer key fallback time if you need more time in this mode.

For information on key fallback time, see chapter "General instrument functions > Key brightness" in the user manual.

For more information on live-mode operation, see [Chapter 6.2, "Setting the output voltage and current limits"](#), on page 35.

7.2.3 Entering data

Data can be entered using one of the following methods:

- Using the navigation controls on the front panel, e.g. rotary knob, arrow keys.
The rotary knob has several functions:
 - Moves the selection, e.g. to a parameter in a settings dialog by turning clockwise or counterclockwise.

Means of manual interaction

- Activates the edit mode of a parameter when pressed.
 - Acts like the [ENTER] key when it is pressed.
 - Increments (by turning clockwise) or decrements (counterclockwise) a numeric parameter.
 - Resets decimal digits to the right of the cursor when it is pressed and held. E.g. Voltage value 10.028 V with cursor on 2nd decimal digital, press and hold the knob until the instrument sets the subsequent decimal digits to 0 (10.020 V).
- Using the [SHIFT] key on front panel to directly set the numerical values. See [Chapter 7.2.3.1, "Entering numeric parameters"](#), on page 48.
 - Using on-screen keyboard for alphanumeric input field in the dialog.

7.2.3.1 Entering numeric parameters

If the input field requires numeric input, you can use either the rotary knob or arrow keys on the front panel to adjust to required values. Alternatively, using the [SHIFT] key on front panel to directly set the numerical values. See [Figure 6-1](#).

To correct value in the dialog or menu

1. Rotate the rotary knob to increase (clockwise direction) or decrease (counterclockwise direction) to the required value.
2. Alternatively, use [SHIFT] key on front panel for direct setting of numeric values. See [Figure 6-1](#).
3. Press the rotary knob to confirm the value with default unit or select the respective softkey for unit to confirm the entry.

To correct value in the channel display area

1. Select the corresponding function key at the front panel, e.g. [Ch1] followed by "Voltage" softkey for voltage setting.
2. Press the [Left] / [Right] arrow key to position at the entry point for correction.
3. Rotate the rotary knob to increase (clockwise direction) or decrease (counterclockwise direction) to the required values.
4. Alternatively, use the [Up] arrow key to increase and [Down] arrow key to decrease to the required value. For directly setting of numeric values, use [SHIFT] key on front panel. See [Figure 6-1](#).

To complete the entry

- ▶ Press the rotary knob.
For directly setting of numeric values, you can complete the entry with a selection of unit softkeys or using default unit by pressing the rotary knob.

7.2.3.2 Entering alphanumeric parameters

If a field requires alphanumeric input, you can use the on-screen keyboard to enter letters and (special) characters. See [Figure 7-7](#).

To enter and confirm an entry

1. Rotate rotary knob to select the desire character to enter.
2. Press the rotary knob to confirm entry.


To correct an entry

1. To delete an entry, use "CURSOR ->" or "CURSOR <-" softkey to set the cursor to the right of the entry you want to correct.
2. Select "Backspace" softkey to delete the entry to the left of the cursor.
3. Enter your correction.

To complete the entry

- ▶ To confirm the entry, select "ACCEPT" softkey to confirm the input.
The R&S NGC100 returns to a previous level in menu of closes a view.

To abort the entry

- ▶ Press  [Back] key at the front panel.
The dialog closes without changing the settings.

7.3 Remote control

In addition to operating the R&S NGC100 directly on the instrument, it is also possible to operate and control it from a remote PC.

Remote control interfaces

The R&S NGC100 provides several interfaces for remote control:

- Ethernet (LAN) interface
- USB standard interface

For detailed information on how to configure the remote control interfaces, see chapter "Interfaces and protocols" in the user manual.

See [Chapter 4.8, "Connecting to LAN"](#), on page 24 for an example of how to set up LAN connection for remote control.

8 Contacting customer support

Technical support – where and when you need it

For quick, expert help with any Rohde & Schwarz product, contact our customer support center. A team of highly qualified engineers provides support and works with you to find a solution to your query on any aspect of the operation, programming or applications of Rohde & Schwarz products.

Contact information

Contact our customer support center at www.rohde-schwarz.com/support, or follow this QR code:



Figure 8-1: QR code to the Rohde & Schwarz support page

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