# R&S®NGA100 Power Supply Series Getting Started


5601890202
Version 06

ROHDE&SCHWARZ
Make ideas real

This manual describes the following R&S®NGA100 models with firmware version 1.00 and higher:

- R&S®NGA101 One-Channel 35V/6A Power Supply 40 W (5601.8002.02)
- R&S®NGA102 Two-Channel 35V/6A Power Supply 80 W (5601.8002.04)
- R&S®NGA141 One-Channel 100V/2A Power Supply 40 W (5601.8002.03)
- R&S®NGA142 Two-Channel 100V/2A Power Supply 80 W (5601.8002.05)


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5601.8902.02 | Version 06 | R&S®NGA100

Throughout this manual, products from Rohde & Schwarz are indicated without the ® symbol, e.g. R&S®NGA is indicated as R&S NGA100.

# Safety Instructions
# Instrucciones de seguridad
# Sicherheitshinweise
# Consignes de sécurité

**⚠ WARNING**

**Risk of injury and instrument damage**

The instrument must be used in an appropriate manner to prevent electric shock, fire, personal injury or instrument damage.

- Do not open the instrument casing.
- Read and observe the "Basic Safety Instructions" delivered as printed brochure with the instrument.
- Read and observe the safety instructions in the following sections.
  Note that the data sheet may specify additional operating conditions.
- Keep the "Basic Safety Instructions" and the product documentation in a safe place and pass them on to the subsequent users.

**⚠ ADVERTENCIA**

**Riesgo de lesiones y daños en el instrumento**

El instrumento se debe usar de manera adecuada para prevenir descargas eléctricas, incendios, lesiones o daños materiales.

- No abrir la carcasa del instrumento.
- Lea y cumpla las "Instrucciones de seguridad elementales" suministradas con el instrumento como folleto impreso.
- Lea y cumpla las instrucciones de seguridad incluidas en las siguientes secciones. Se debe tener en cuenta que las especificaciones técnicas pueden contener condiciones adicionales para su uso.
- Guarde bien las instrucciones de seguridad elementales, así como la documentación del producto, y entréguelas a usuarios posteriores.

**⚠ WARNUNG**

**Gefahr von Verletzungen und Schäden am Gerät**

Betreiben Sie das Gerät immer ordnungsgemäß, um elektrischen Schlag, Brand, Verletzungen von Personen oder Geräteschäden zu verhindern.

- Öffnen Sie das Gerätegehäuse nicht.
- Lesen und beachten Sie die "Grundlegenden Sicherheitshinweise", die als gedruckte Broschüre dem Gerät beiliegen.
- Lesen und beachten Sie die  Sicherheitshinweise in den folgenden Abschnitten; möglicherweise enthält das Datenblatt weitere Hinweise zu speziellen Betriebsbedingungen.
- Bewahren Sie die "Grundlegenden Sicherheitshinweise" und die Produktdokumentation gut auf und geben Sie diese an weitere Benutzer des Produkts weiter.

**⚠ AVERTISSEMENT**

**Risque de blessures et d'endommagement de l'appareil**

L'appareil doit être utilisé conformément aux prescriptions afin d'éviter les électrocutions, incendies, dommages corporels et matériels.

- N'ouvrez pas le boîtier de l'appareil.
- Lisez et respectez les "consignes de sécurité fondamentales" fournies avec l’appareil sous forme de brochure imprimée.
- Lisez et respectez les instructions de sécurité dans les sections suivantes. Il ne faut pas oublier que la fiche technique peut indiquer des conditions d’exploitation supplémentaires.
- Gardez les consignes de sécurité fondamentales et la documentation produit dans un lieu sûr et transmettez ces documents aux autres utilisateurs.

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

ROHDE&SCHWARZ

1171.0200.78-01

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# 1 Documentation Overview

This section provides an overview of the R&S NGA100 user documentation.

## 1.1 Manuals

You find the documents on the R&S NGA100 product page at:

www.rohde-schwarz.com/manual/nga100

### Getting Started

Introduces the R&S NGA100 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.

### Basic safety instructions

Contains safety instructions, operating conditions and further important information. The printed document is delivered with the instrument.

### Instrument security procedures manual

Deals with security issues when working with the R&S NGA100 in secure areas.

## 1.2 Data Sheet

The datasheet contains the technical specifications of the R&S NGA100 power supply series. It also lists all options with their order numbers and accessories.

See www.rohde-schwarz.com/brochure-datasheet/nga100

## 1.3 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.

## 1.4 Release Notes, Open Source Acknowledgment

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 downloaded from the instrument.

See www.rohde-schwarz.com/firmware/nga100.

# 2 Welcome to R&S NGA100

The one-channel or two-channel power supply series are based on a classical transformer concept with high efficiency electronic pre-regulators and secondary linear regulators. This concept allows the instrument to achieve the high output power within a minimum space, high efficiency and lowest residual ripple.

The R&S NGA100 power supply series feature galvanically isolated, floating overload and short-circuit proof outputs with adjustable power ratings. The outputs can be connected in series or in parallel, thus making high currents and voltages available.

Multi-purpose protection functions are available for each channel which you can set separately, such as overcurrent protection (FUSE), overvoltage protection (OVP), overpower protection (OPP) and overtemperature protection (OTP). If such a limit is reached, the affected output channel is automatically turned off and an indicator message (FUSE, OVP, OPP or OTP) is displayed. The overcurrent protection can be linked to other channel (FuseLink function). In this case, all linked channels are turned off when the set channel reaches its limit.

The EasyArb function allows channel 1 (Ch 1) to have freely definable voltage and current sequences with a timeframe as short as 10 ms. It allows you to vary the voltage or current limit during a test sequence, for example to simulate different charging conditions of a battery. With EasyRamp function, the R&S NGA100 provides the operating condition to simulate the continuous rise of the supply voltage within a defined timeframe of 10 ms to 10 s.

Four data lines of the digital I/O interface are mutually independent and can be used as trigger input or trigger output separately. Various trigger conditions (e.g. fuse tripped, voltage, current, indicator messages) can be used to turn off, on or invert the output state when the trigger condition is met.

All R&S NGA100 power supply series are equipped with a color LCD display (320 x 240 pixels resolution). The R&S NGA100 comes with a USB interface, LAN and optional wireless LAN (WLAN) interface.

For models with WLAN, network connection can also be established wirelessly.

This user manual contains a description of the functionalities that the instrument provides. The latest version is available for download at the product homepage (http://www.rohde-schwarz.com/product/nga100).

# 3 Putting into Operation

This chapter describes the steps to set up the R&S NGA100 for the first time.

**⚠ WARNING**

**Risk of injury and instrument damage**

The instrument must be used in an appropriate manner to prevent electric shock, fire, personal injury, or damage.

- Do not open the instrument casing
- Read and observe the "Basic Safety Instructions" delivered as a printed brochure with the instrument. Note that the basic safety instructions also contain information on operating conditions that prevent damage to the instrument

In addition, read and observe the safety instructions in the following sections. Notice that the data sheet may specify additional operating conditions.

**NOTICE**

**Risk of instrument damage during operation**

An unsuitable operating site or test setup can cause damage to the instrument and the connected devices. Ensure the following operating conditions before you switch on the instrument:

- The instrument is dry and shows no sign of condensation
- The instrument is positioned as described in Chapter 3.4.1, "Bench Operation", on page 14
- The ambient temperature does not exceed the range specified in the data sheet
- Voltage levels at the input connectors are all within the specified ranges
- Voltage outputs are correctly connected and not overloaded

**WARNING**

**Risk of radio interference**

This is a class A product. In a domestic environment, this product may cause radio interference in which case the user may be required to take adequate measures.

**EMI impact on measurement results**

Electromagnetic interference (EMI) may affect the measurement results.

To suppress the generated EMI:

- Use suitable shielded cables of high quality, for example, LAN cables
- Note the EMC classification in the data sheet


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## 3.1 Safety

**NOTICE**

**Recommendations on secure operation**

The R&S NGA100 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.

Please always install the latest firmware.

It is highly recommended that you work closely with your IT department or system administrator to ensure compliance with your company policies when connecting devices to your company's network.

This instrument was built in compliance with DIN EN 61010-1 (VDE 0411 part 1), safety regulations for electrical instruments, control units and laboratory equipment. It has been tested and shipped from the plant in safe condition. It is also in

compliance with the regulations of the European standard EN 61010-1 and the international standard IEC 61010-1.

To maintain this condition and ensure safe operation, you must observe all instructions and warnings given in this user manual. Casing, chassis and all measuring ports are connected to a protective earth conductor. The instrument is designed in compliance with the regulations of protection class I.

For safety reasons, the instrument may only be operated with authorized safety sockets. The power cord must be plugged in before signal circuits may be connected.

Never use the product if the power cable is damaged. Check regularly that the power cables are in perfect condition. Choose suitable protective measures and installation types to ensure that the power cord cannot be damaged and that no harm is caused by tripping hazards or from electric shock, for instance.

**DANGER**

**Risk of electric shock**

It is prohibited to disconnect the earthed protective connection inside or outside of the instrument!

If it is assumed that a safe operation is no longer possible, the instrument must be shut down and secured against any unintended operation.

Safe operation can no longer be assumed as follows:

- Instrument shows visible damage
- Instrument includes loose parts
- Instrument no longer functions properly
  - After an extended period of storage under unfavorable conditions (e.g. outdoors or in damp rooms)
  - After rough handling during transport (e.g. packaging that does not meet the minimum requirements by post office, railway or forwarding agency)

**DANGER**

**Exceeding the low voltage protection**

Use insulated wires and not bare wires for the terminal connection.

For the series connection of all output voltages of the 35 V variant, it is possible to exceed the low voltage protection of 42 V. Please note that in this case any contact with live components is life-threatening. It is assumed that only qualified and trained personnel service the power supplies and the connected loads.

Before switching on the product, it must be ensured that the nominal voltage setting on the product matches the nominal voltage of the AC supply network. If it is necessary to set a different voltage, the power fuse of the product must be changed accordingly.

## 3.2 Intended Operation

The instrument is intended only for use by personnel familiar with the potential risks of measuring electrical quantities.

For safety reasons, the instrument may only be connected to properly installed safety socket outlets. Separating the ground is prohibited.

The power plug must be inserted before signal circuits may be connected.

Use only the power cord included in the delivery package. See "Delivery package" on page 13.

Before each measurement, measuring cables must be inspected for damage and replaced if necessary. Damaged or worn components can damage the instrument or cause injury.

The product may be operated only under the operating conditions and in the positions specified by the manufacturer, without the product's ventilation being obstructed. If the manufacturer’s specifications are not observed, this can result in electric shock, fire and/or serious personal injury, and in some cases, death.

### Provide adequate airflow

Do not block the air intake at the front and side of the instrument or the exhaust at the rear. Install the instrument on a location that allows sufficient space for air circulation at the air intake and exhaust. Recommended spacing to non-heat producing surface is at least 2.5 inches (63.5 mm) from the ventilation holes.

Applicable local or national safety regulations and rules for the prevention of accidents must be observed in all work performed.

The instrument is designed for use in the following sectors: Industrial, residential, business and commercial areas and small businesses.

The instrument is designed for indoor use only. Before each measurement, you need to verify at a known source if the instrument functions properly.

To disconnect from the mains, the low-heat device socket on the back panel has to be unplugged.

See Table 3-1 for the general data on the instrument specification. For more information, see the instrument product brochure.

***Table 3-1: General data on instrument specification***

| | | |
|---|---|---|
| Mains nominal voltage | AC | 100 V / 115 V / 230 V (±10 %)<br>50 Hz / 60 Hz |
| Power consumption | Maximum input power | 230 W |
| Mains fuses<br>(fuse size: 5 mm x 20 mm) | 100 V / 115 V AC | IEC 60127 T5.0H250V |
| | 230 V AC | IEC 60127 T2.5H250V |
| 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 | | R&S HZN96 rack adapter 2U<br>(P/N: 3638.7813.02) |
| Dimensions | W x H x D | 222 mm x 96 mm x 446 mm<br>(8.74 in x 3.78 in x 17.56 in) |

| | | |
|---|---|---|
| Weight | R&S NGA101, R&S NGA141 | 6.6 kg (14.55 lb), 6.9 kg (15.21 lb) |
| | R&S NGA102, R&S NGA142 | 7.0 kg (15.43 lb), 7.3 kg (16.09 lb) |

## 3.3 Unpacking and Checking the Instrument

Check the equipment for completeness using the delivery note and package contents list for the various items. Check the instrument for any damage and loose parts. If there is any damage, immediately contact the carrier who delivered the instrument.

**Packing material**

Retain the original packing material. If the instrument needs to be transported or shipped at a later date, you can use the material to protect the control elements and connectors.

**NOTICE**

**Risk of damage during transportation and shipment**

Insufficient protection against mechanical and electrostatic effects during transportation and shipment can damage the instrument.

- Always ensure that sufficient mechanical and electrostatic protections are provided
- When shipping an instrument, the original packaging should be used. If you do not have the original packaging, use sufficient padding to prevent the instrument from moving around inside the box. Pack the instrument in antistatic wrap to protect it from electrostatic charging
- Secure the instrument to prevent any movement and other mechanical effects during transportation

**Delivery package**

The package contents contain the following items:

- R&S NGA100 power supply preloaded with two 230 V fuses
- Four power cables

- Two 115 V fuses (replace the preloaded fuses with these fuses depending on the mains voltage, see Chapter 4.2, "Switching On the Instrument", on page 21 for more information)
- One 5-pin plug for digital I/O port connection
- One 8-pin terminal block plug for output connection
- One Getting Started manual
- One document folder containing Basic Safety instructions guide, KC and CE certificate

## 3.4 Setting Up the Instrument

The R&S NGA100 is designed for benchtop and rackmount.

### 3.4.1 Bench Operation

On a benchtop, the R&S NGA100 can either lie flat or stand on its feet. As shown in Figure 3-1, feet on the bottom can be folded out to set the instrument in an inclined position.

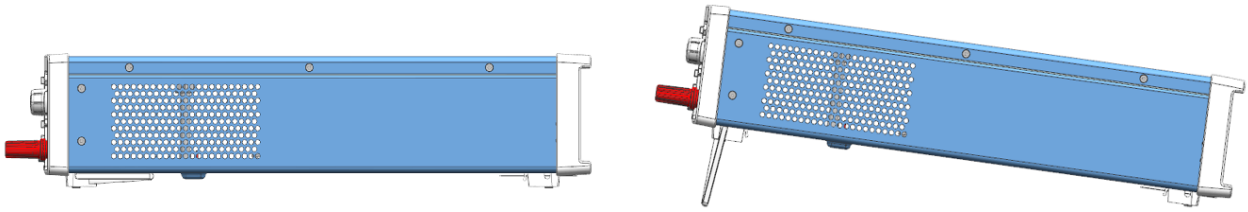

*Figure 3-1: Operating positions*

**NOTICE**

**Positioning of instrument**

The instrument must be positioned in a manner that allows the user to disconnect the unit from the mains at any time and without restrictions.

**⚠ WARNING**

**Risk of injury if feet are folded out**

The feet can fold in if they are not folded out completely or if the instrument is shifted. Collapsing feet can cause injury or damage the instrument.

- Fold the feet completely in or out to ensure stability of the instrument. Never shift the instrument when the feet are folded out.
- When the feet are folded out, do not work under the instrument or place anything underneath.
- The feet can break if they are overloaded. The overall load on the folded-out feet must not exceed 250 N.

### 3.4.2 Rack Mounting

The instrument can be installed in a 19" rack using the rack adapter R&S HZN96 (P/N 3638.7813.02). Proceed according to the installation instructions supplied with the rack adapter.

**NOTICE**

**Ambient temperature**

Operate R&S NGA100 power supply in an area where the ambient temperature is within +5 °C to +40 °C. The R&S NGA100 power supply is fan-cooled and must be installed with sufficient space along the sides to allow proper air circulation. Ensure that fan openings are unobstructed and airflow vents are unimpeded.

Operating the instrument with insufficient airflow or outside the allowable ambient temperature can disrupt the operation and even cause damage.

# 4 Instrument Tour

This chapter provides an overview of all the controls available in the R&S NGA100 models and steps to switch on the instrument for the first time.

## 4.1 Overview of Controls

### 4.1.1 Front Panel

The front panel of the R&S NGA100 is as shown in Figure 4-1. The function keys and navigation controls are located at the right side of the display. The various connectors are located below the display and function keys.

The following power supply models are available:

***Table 4-1: Power supply models***

| Models | Number of output channels |
|---|---|
| NGA101 (0 V - 35 V/6 A), NGA141 (0 V - 100 V/2 A) | 1 (maximum 40 W) |
| NGA102 (0 V - 35 V/6 A), NGA142 (0 V - 100 V/2 A) | 2 (maximum 80 W) |

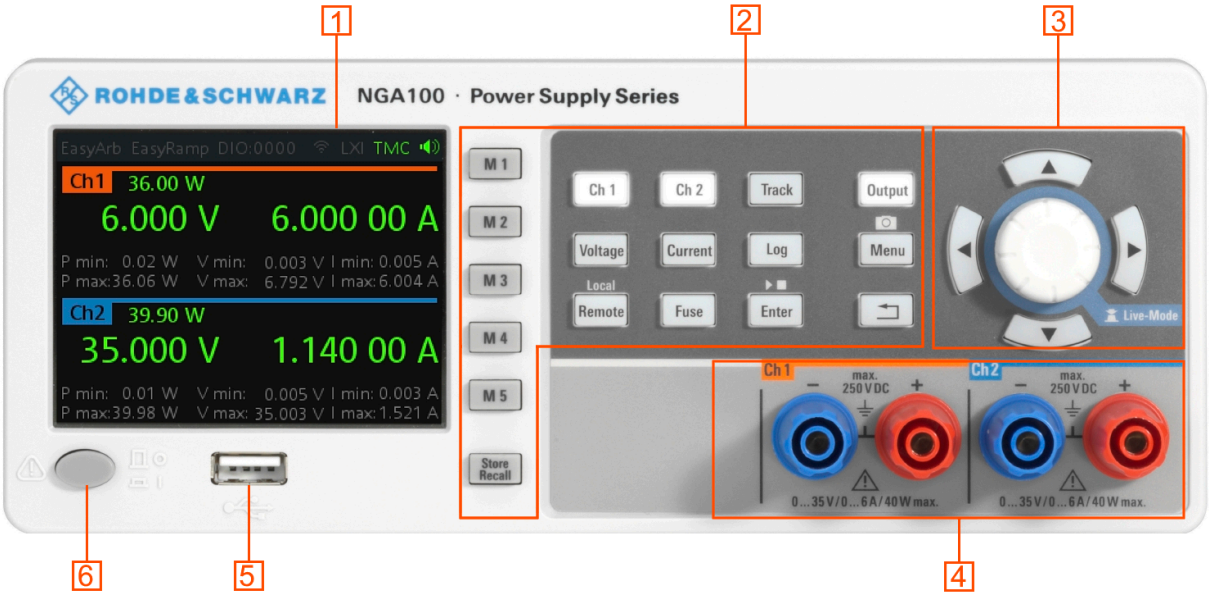


***Figure 4-1: Front panel of R&S NGA100 with 2 channels***

1 = Display
2 = Function keys
3 = Rotary knob and arrow keys
4 = Output channels (see Table 4-1)
5 = USB connector
6 = Power key

### Display (1)

The display is a color LCD screen. Depending on the instrument models, up to two channels are shown on the screen. The respective measurement settings and functions are displayed in the individual channel section. There is a status bar above the channel section to indicate the functions used and operation mode of the instrument.

For a detailed description on-screen layout, see section "Screen Layout" in the User Manual.

### Function keys (2)

Function keys are means of input for manual operation of the instrument functions. When a function key is pressed, all the related keys are also illuminated.

For detailed description on function keys, see section "Function Keys" in the User Manual.

### Rotary knob and arrow keys (3)

Rotary knob and arrow 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 rotary knob and arrow keys, see section "Navigation Controls" in the User Manual.

### Output channels (4)

Depending on the instrument models, up to two output channels are available for output of power to the connected load. See Table 4-1.

### USB connector (5)

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 FAT32 only.

### Power key (6)

The [Power] key switches the instrument on and off.

## 4.1.2 Rear Panel

Figure 4-2 shows the rear panel of the R&S NGA100 with its connectors.

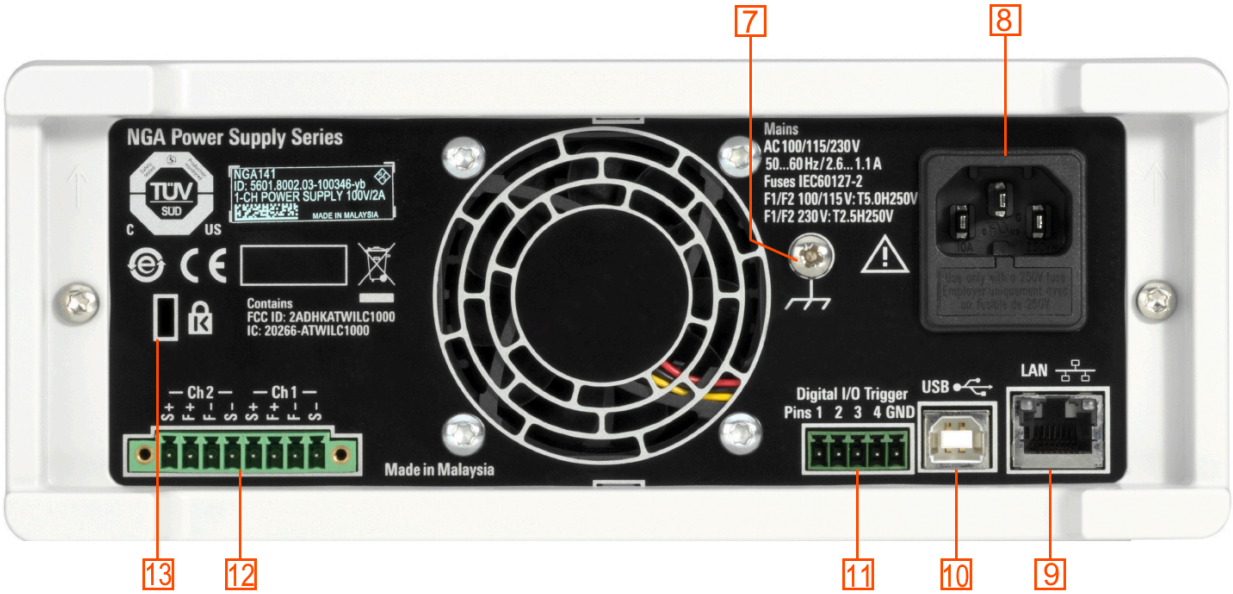


***Figure 4-2: Rear panel of R&S NGA100***

7 = Ground terminal
8 = AC inlet with fuse holder
9 = Ethernet (LAN) connector
10 = USB connector
11 = Digital I/O connector
12 = Rear panel connector
13 = Kensington lock

### Ground terminal (7)

M4 screw provides connection to earth ground through the instrument ground/ chassis.

### AC inlet with fuse holder (8)

**Main supply cord**

Do not use detachable mains supply cord with inadequate rating.

For safety reasons, the instrument can only be operated with authorized safety sockets.

The power cable must be plugged in before signal circuits can be connected. Never use the product if the power cable is damaged. See Chapter 4.2, "Switching On the Instrument", on page 21 for more information.

### Ethernet connector (9)

This connector is used for establishing remote control via SCPI. See section "Ethernet Setup" in the user manual for more information on the connection setup.

### USB connector (10)

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

### Digital I/O connector (11)

The Digital I/O connector is a 5-pin terminal block for external trigger input or output.

Measurement control can be achieved by means of an external input signal or as an output signal to trigger other instruments for some measurements.

The Digital Trigger I/O option (NGA-K103) must be installed for this function to be available in the instrument.

### Rear panel connector (12)

**DANGER**

**Shock Hazard**

Do not turn on AC power when connecting wires to the rear panel connector.

Tightened all wires connected to the terminal block.

**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 should not be used at the same time as it can cause the instrument to malfunction.

The rear panel connector contains both output ("F+", "F-") and sense ("S+", "S-") connections. Connector for "Ch 2" is only available in the NGA102, NGA142 models.

**Kensington security slot (13)**

A Kensington lock can be anchored to the R&S NGA100 power supply housing to secure it to a workstation mechanically.

### 4.1.3 Bottom Panel

The voltage selector is located at the bottom panel. On your first power-on connection, you should see a yellow label sticker attached over the AC inlet. Before peeling off the yellow label sticker, make sure that the correct fuse rating is used for the mains voltage.

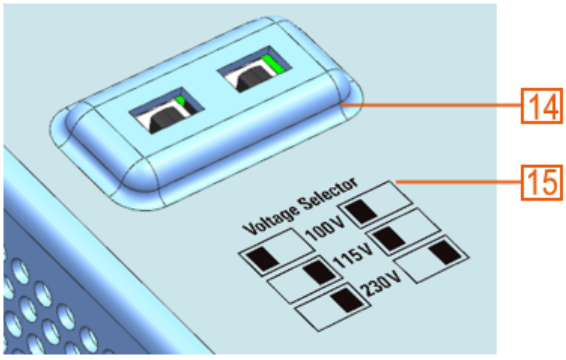


*Figure 4-3: Bottom panel of R&S NGA100*

14 = Voltage selector
15 = Voltage selector label

**Voltage selector (14), Voltage selector label (15)**

The voltage selector selects the mains voltage between 100 V, 115 V and 230 V. See Table 3-1 for the fuse rating.

To set the correct fuse rating, use a tool e.g. a flat screwdriver to move the selector according to the voltage selector label.

- To select 100 V, slide both voltage selector to the left
- To select 115 V, slide both voltage selector facing inward
- To select 230 V, slide both voltage selector to the right

## 4.2 Switching On the Instrument

Before switching on the instrument, check that all the instructions in the “Basic Safety Instruction” brochure and safety measures in previous sections are observed.

Also, check if the value on the voltage selector corresponds to the mains voltage (100 V, 115 V or 230 V).

**To change the power fuse / mains voltage setting:**

1. Peel off the yellow label sticker on the AC inlet.
2. Pull out the fuse holder which is located directly on top of the socket.
3. Remove the preloaded fuses from the fuse holder.
4. Check the rating on the caps of both fuses that you want to change.
   By default, the instrument is preloaded with two 230 V fuses.
   For more information, see "Voltage selector (14), Voltage selector label (15)" on page 21.
5. Once verified, insert the fuses into each groove of the fuse holder.
6. Return the fuse holder to its position in the panel.

**To switch on the instrument:**

1. Connect the power cable to the AC power connector on the rear panel of the R&S NGA100.

2. Connect the power cable to the socket outlet.
3. Press [Power] key on the front panel.
   The instrument performs a system check, boots the operating system and starts the R&S NGA100 firmware.
   By default, all output channels are turned off when the instrument is switched on to prevent connected loads from being damaged unintentionally.
   During startup, the R&S NGA100 is loaded with the last saved instrument settings from memory location "M1" and auto saved parameters. See "Store and Recall" in the User Manual.

**To switch off instrument:**

1. Press [Power] key.
2. Disconnect the AC power cable from the socket outlet.

# 5 Trying Out the Instrument

This chapter describes some basic functions that you can perform with the R&S NGA100.

## 5.1 Selecting the Channels

To select a channel, press the corresponding channel key. The key illuminates.

## 5.2 Setting the Output Voltage and Current Limit

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).
3. Rotate the rotary knob to adjust value.
4. To exist Live-Mode, press the rotary knob.

Alternatively:

1. Press [Voltage] or [Current] key on the front panel.
2. For the two-channel R&S NGA100, press the desired channel key to activate the respective voltage or current limit setting of that channel. The value on the respective channel becomes editable and is positioned by a blue cursor.
3. Press the [Left] or [Right] arrow key to move the cursor.
4. Press the [Up]/[Down] arrow key or turn the rotary knob to change the value. The new value registers immediately.

## 5.3 Activating the Channels 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 [Output] key on the front panel followed by the desired channel key or vice versa.

For single channel models, press the [Output] key to activate the channel output.

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.

## 5.4 Storing/Recalling of Instrument Settings

The instrument settings can be stored in the instrument memory by long pressing the [Store Recall] key followed by the desired memory location key ([M1] to [M5]). The previous saved settings are overwritten.

To retrieve the settings, press [Store Recall] key and select the desired memory location key ([M1] to [M5]).

# 6 Maintenance and Support

## 6.1 Maintenance

Regular maintenance improves the life span of the instrument, the following chapter provides information on instrument maintenance.

### Cleaning

Before cleaning the instrument, ensure that it has been switched off and the power cable is disconnected.

Clean the outer case of the instrument at regular intervals, using a soft, lint-free dust cloth.

**NOTICE**

**Instrument damage caused by cleaning agents**

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

Cleaning agents, solvents (thinners, acetone), acids and bases can damage the front panel labeling, plastic parts and display.

The display may only be cleaned with an appropriate glass cleaner. Rub the display with a dry, clean and lint-free cloth. Do not allow cleaning fluid to enter the instrument.

### Internal battery replacement

An internal CR2032 coin cell battery powers the real-time clock circuit which provides continuous time stamp for the instrument. If the battery fails, the system clock and time stamp for the logging function are not available but other instrument functions are not affected.

Under normal usage at room temperature, the battery is expected to last up to 10 years. However, the battery life expectancy is reduced if the device is stored at temperature above 40°C for an extended period of time.

If the instrument cannot retain the date and time settings after turning off the AC input, the battery is discharged.

Contact your local service partner for battery replacement.

## 6.2 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 6-1: QR code to the Rohde & Schwarz support page*

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