R&S®NGP800
Power Supply Series
Getting Started

5601560302
Version 12

ROHDE&SCHWARZ
Make ideas real

This manual describes the following R&S®NGP800 models with firmware version 2.025 and higher:

- R&S®NGP802 Two-channel 32V/20A Power Supply 400 W (5601.4007.05)
- R&S®NGP822 Two-channel 64V/10A Power Supply 400 W (5601.4007.06)
- R&S®NGP804 Four-channel 32V/20A Power Supply 800 W (5601.4007.02)
- R&S®NGP824 Four-channel 64V/10A Power Supply 800 W (5601.4007.03)
- R&S®NGP814 Four-channel 32V/20A & 64V/10A Power Supply 800 W (5601.4007.04)

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5601.5603.02 | Version 12 | R&S®NGP800

Throughout this manual, products from Rohde & Schwarz are indicated without the ® symbol, e.g. R&S®NGP800 is indicated as R&S NGP800.

Contents

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.
- 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 NGP800

Labels on the casing inform about:

- Personal safety, see "Meaning of safety labels" on page 9.
- Product and environment safety, see Table 1-1.
- Device information is provided on a sticker attached to the rear panel of R&S NGP800. 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 NGP800 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 NGP800 user documentation.

2.1 Manuals

You find the documents on the R&S NGP800 product page at:

www.rohde-schwarz.com/product/ngp800

Getting started

Introduces the R&S NGP800 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 NGP800 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 NGP800 power supply series. It also lists all options with their order numbers and accessories.

See www.rohde-schwarz.com/brochure-datasheet/ngp800

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/ngp800.

3 Welcome to R&S NGP800

The two or four-channel power supply series are based on a primary switched-mode regulator with power factor correction. This concept allows the instrument to achieve highest accuracy and lowest residual ripple.

The R&S NGP800 power supply series feature galvanically isolated, overload and short-circuit proof outputs. The outputs can be connected in parallel and serial to achieve higher currents or voltages.

Multi-purpose protection functions, such as overcurrent protection (OCP), overvoltage protection (OVP) and overpower protection (OPP) can be set separately for each channel. If the set limit is reached, the affected output channel is automatically turned off and an indicator icon (C, V, P) flashes on the display. The overcurrent protection can also be linked to the other channels. If the current exceeds the limit on the affected channel, all linked channels will be switched off.

The R&S NGP800 power supply series are also protected from overheating. Each channel is equipped with a temperature sensor that monitors the channel operating temperature for controlling the fan speed and overtemperature protection. If the safe limit is exceeded, the output of the affected channel is switched off. The channel must cool down to a defined threshold before the output can be switched on again. Operations of the other channels are not affected. Also, the actual operating speed of the fans is monitored. If a fan is not running, e.g. rotor locked condition, all the outputs will be switched off to prevent overheating.

The R&S QuickArb function allows freely definable voltage and current sequences with a timeframe as short as 1 ms, e.g. to simulate different charging conditions of a battery. The voltage and current points can also be grouped in different blocks which can be sequenced and repeated independently to achieve a flexible arbitrary function generation.

With the R&S EasyRamp function, the R&S NGP800 power supply provides the operating condition to ramp up the supply voltage within a defined timeframe up to 10 s with 1 ms step size and it can be set independently for each channel. Furthermore, the channels can be sequenced to ramp up the voltage output applied at different times. With different slew rates and delays between channel outputs, it is easy to test multi-voltage systems reliability. For the four-channel power supplies, the outputs can also be arranged into two independent subgroups.

The analog input and digital I/O interfaces at the rear panel can be activated with an option key. The analog input allows you to control the output directly using

voltage signals (0 V to 5 V analog input corresponds to 0 to Vmax or Imax) and can be set independently for each channel. The analog inputs are galvanically isolated from the channel outputs, making the connection simpler. The digital I/O provides an 8-bit control port for various control functions. Each pin can be configured as input or output port, to control any output channel, trigger an event, e.g. start arbitrary or to indicate various conditions, e.g. over current protections.

The R&S NGP800 power supplies are equipped with a color 800 x 480 5" TFT LCD touch screen and a USB and LAN interfaces to control the instrument remotely. The R&S NGP800 power supplies can also be remote-controlled using the GPIB option.

The user manual describes all instrument functionalities. The latest version is available for download from the product homepage (http://www.rohde-schwarz.com/product/ngp800).

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 NGP800 carefully.
2. Retain the original packing material. Use it when transporting or shipping the R&S NGP800 later.
3. Using the delivery package list, 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.

4.2.1 Delivery package

The delivery package contains the following items:

- R&S NGP800 power supply
- Four power cables
- Depending on the power supply models:
  - For two-channel models: one 8-pin terminal block plug (P/N: 3639.1025.00) for output connections
  - For four-channel models: two 8-pin terminal block plugs (P/N: 3639.1025.00) for output connections
- One printed Getting Started manual

- One document folder with multilingual safety instruction and CE certificate

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.

See also "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:
  - 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 NGP800

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 NGP800 on a bench top

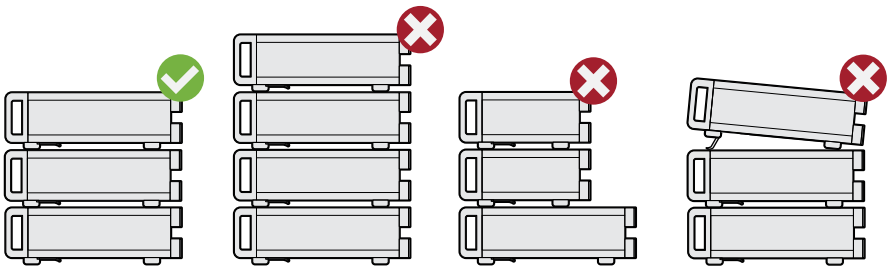
To place the product on a bench top

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. 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).
   - 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 NGP800 in a rack

To prepare the rack

1. Observe the requirements and instructions in "Setting up the product" on page 7.
2. **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 NGP800 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 NGP800 in a rack

1. Use an adapter kit that fits the dimensions of the R&S NGP800 to prepare the R&S NGP800 for rack mounting.
   a) Order the R&S ZZA-GE23 rack adapter kit (P/N: 5601.4059.00) designed for the R&S NGP800.
   b) Mount the adapter kit. Follow the assembly instructions provided with the adapter kit.
2. Lift the R&S NGP800 to shelf height.
3. Push the R&S NGP800 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 NGP800 at the rack.

To unmount the R&S NGP800 from a rack

1. Loosen the screws at the rack brackets.
2. Remove the R&S NGP800 from the rack.

3. If placing the R&S NGP800 on a bench top again, unmount the adapter kit from the R&S NGP800. 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

General data		
Mains nominal voltage	100 VAC to 250 VAC 50 Hz / 60 Hz	
Maximum input power	650 W for 2 channels 1125 W for 4 channels	
Mains fuses	Internal 16 A 250 V IEC 60127-2/7 fast-acting Not user accessible	
Operating temperature range	+5 °C to +40 °C	
Storage temperature range	-20 °C to +70 °C	
Humidity noncondensing	5 % to 95 %	
Display	TFT 5" 800 pixels x 480 pixels WVGA Touch	
Rack installation	R&S ZZA-GE23 rack adapter 2U (P/N: 5601.4059.00)	
Dimensions (W x H x D)	362 mm x 100 mm x 451 mm (14.25" x 3.94" x 17.76")	
Weight	R&S NGP802/822 (2-channel)	7.5 kg (16.5 lb)
	R&S NGP804/814/824 (4-channel)	8.0 kg (17.6 lb)

Operating limits

The R&S NGP800 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 NGP800 to ensure safe operation of the instrument.

See Table 4-2 for protection limits of the R&S NGP800.

Table 4-2: Protection limits for R&S NGP800

Specification	Limits
Maximum output voltage	32 V module: 32 VDC 64 V module: 64 VDC
Maximum output current	32 V module: 20 ADC 64 V module: 10 ADC
Maximum voltage against earth	250 VDC
Maximum counter-voltage (same polarity)	32 V module: 35 VDC 64 V module: 70 VDC
Maximum reverse voltage (opposite polarity)	0.4 VDC
Maximum reverse Current (through protection diode, instrument must be operating)	20 A
AC input	100 VAC to 250 VAC, 50 Hz / 60 Hz
Maximum power output	400W for NGP802 & NGP822 800W for NGP804, NGP814 & NGP824

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 ≤ 1m.
- 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" on page 32.

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 below 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 NGP800 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

► The instrument is protected by internal fuses which are not user accessible. If the instrument is not powering on, this may indicate an open fuse.

Sent the instrument for servicing.

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 22.

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 30.
   The LED of the [Power] key is lighted red.
2. Press the [Power] key on the front panel of the R&S NGP800.
   The LED of the [Power] key turns off.
   The instrument performs a system check, boots the operating system and starts the R&S NGP800 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 NGP800 is loaded with the last saved instrument settings from internal memory and auto saved parameters. 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 NGP800 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 NGP800.

To connect R&S NGP800 to the LAN:

1. **NOTICE!** Recommendation on secure operation. The R&S NGP800 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.

   By default, the R&S NGP800 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 NGP800 cannot obtain an IP address automatically, or cannot establish the connection, the LAN interface icon, in the status bar turns red.

Possible reasons are that the LAN does not support DCHP 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 NGP800 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 NGP800 indicates the address information and LAN parameters in the LAN setting dialog. See Figure 4-1.

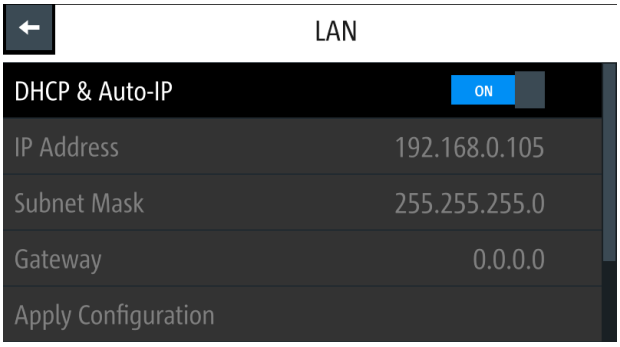


Figure 4-1: LAN settings dialog

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 NGP800 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 NGP800. You can also use them for firmware updates.

► Connect the USB storage device to the USB type A connector.

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 panel", on page 27
- Chapter 5.2, "Rear panel", on page 30

These sections explain the controls and connections on the front and rear panel of the R&S NGP800. For specifications of the interfaces, see the data sheet.

The meanings of the labels on the R&S NGP800 are described in Chapter 1.2, "Labels on R&S NGP800", on page 9.

5.1 Front panel

The front panel of the R&S NGP800 power supply is shown in Figure 5-1. The function keys and navigation controls are located beside the display. The various connectors are located at the right of the display.

The following power supply models are available:

Table 5-1: Power supply models

Models	Number of output channels
R&S NGP802, R&S NGP822	2
R&S NGP804, R&S NGP814, R&S NGP824	4

Figure 5-1: Front panel of R&S NGP800 power supply

1 = Menu control keys
2 = Display with touch screen
3 = Rotary knob and back key
4 = Output and channel keys
5 = Chassis ground terminal (4mm socket)
6 = Output terminals (see Table 5-1)
7 = USB connector
8 = Power key

Menu control keys (1)

The menu control keys include the [Home], [Settings] and [User] keys. These keys allow you to access to the home window, instrument menu window and user-defined functions in the instrument, respectively.

For a detailed description on menu control keys, see section "Menu Controls" in the User Manual.

Display (2)

The display is a color TFT touch screen. Depending on the instrument models, up to four channels are shown on the display. The respective measurement settings and menu settings are displayed in the individual channel display area.

Two information status bars, providing the overall device operating mode and channel settings of the instrument are located respectively at the device level (top-right hand corner of the display area) and channel level (on top of individual channel display area) of the instrument.

For a detailed description on-screen layout, see Chapter 7.2.1, "Understanding the display information", on page 40.

Rotary knob and back key (3)

The rotary knob and back key are used for menu navigation and value adjustment in the instrument.

For a detailed description on navigation, see "To enter values by using the front panel controls" on page 53.

Output and channel keys (4)

Depending on the instrument models, up to four channels and one output key are provided to select individual channel and enable/disable the output(s).

Chassis ground terminal (5)

A 4 mm socket protective ground terminal is provided for the user to connect to earth ground through the instrument ground/chassis, see Chapter 1.2, "Labels on R&S NGP800", on page 9.

Output terminals (6)

Two-channel instrument models: R&S NGP802 and R&S NGP822 are equipped with 8 terminals for outputs and remote sense connections. Four-channel instrument models: R&S NGP804, R&S NGP814 and R&S NGP824 are equipped with 16 terminals for outputs and remote sense connections.

For 32 V models, each output is capable to source 200 W of power at 0 V to 32 V and maximum current of 20 A.

For 64 V models, each output is capable to source 200 W of power at 0 V to 64 V and maximum current of 10A.

See also "Output terminals" on page 32.

USB connector (7)

USB Type-A connector is provided for connecting a USB flash drive to perform software update, store logging data or screen captures. It can also be used for an external USB mouse connector. See also Chapter 4.9, "Connecting USB devices", on page 25.

Power key (8)

The [Power] key toggles the instrument between standby state and normal state. In standby state, the key is illuminated in red and the instrument internal circuits are operated in powered down state. In normal state, all the internal modules are

powered up and the instrument will startup to operate normally. The LED illumination is turned off in this state. See also Chapter 4.7, "Switching on or off", on page 23.

5.2 Rear panel

Figure 5-2 shows the rear panel of the R&S NGP800 power supply with its connectors.

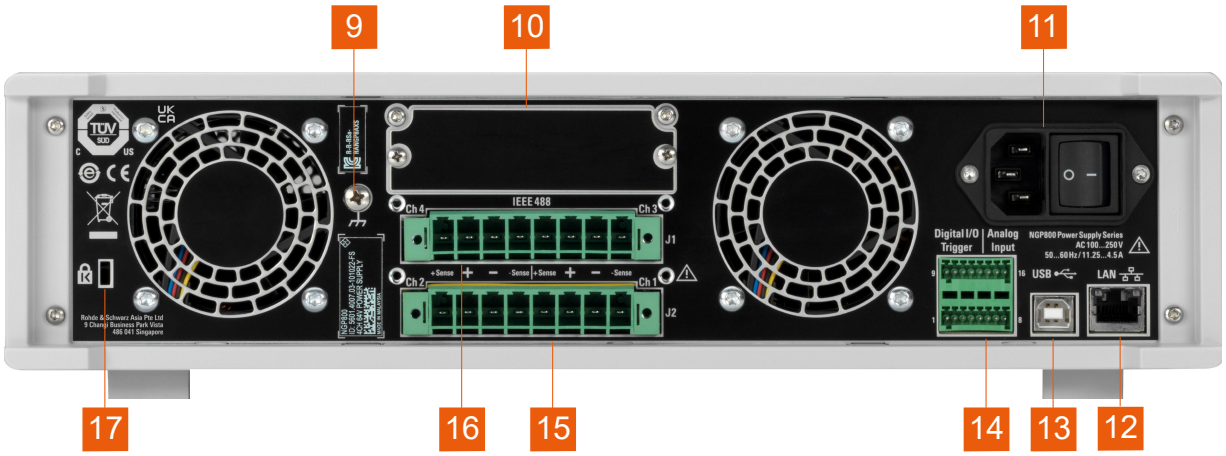


Figure 5-2: Rear panel of R&S NGP800 power supply

9 = Ground terminal
10 = IEEE-488 (GPIB) interface
11 = AC inlet with integrated 2-pole rocker switch
12 = Ethernet (LAN) connector
13 = USB-B connector (device)
14 = Analog input and digital I/O connector
15 = Channel 1 and 2 rear panel connector
16 = Channel 3 and 4 rear panel connector (for R&S NGP804, R&S NGP814 and R&S NGP824 models only)
17 = Kensington lock

Ground terminal (9)

Protective ground terminal to secure the R&S NGP800, e.g. with a ground external conductor, see Chapter 1.2, "Labels on R&S NGP800", on page 9.

IEEE-488 (GPIB) interface (10)

Option: R&S NG-B105 provides an IEEE-488 (GPIB) bus interface.

AC inlet with integrated 2-pole rocker switch (11)

Main supply cord

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

Never use the product if the power cable is damaged.

The built-in 2-pole rocker switch is the main power switch of the instrument which connects/disconnects the R&S NGP800 from the AC supply, see Chapter 4.6, "Connecting to power", on page 22.

Ethernet connector (12)

This 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.

USB connector (13)

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.

Digital I/O & analog input connector (14)

NOTICE

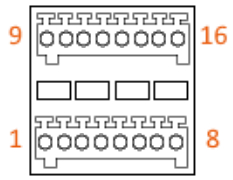
Risk of instrument damage

Do not exceed the maximum voltage rating of the digital I/O pins (5.25 V max) when supplying voltages to the pins.

For more information, see the instrument datasheet (P/N: 3609.1927.32).

A 16-pin terminal block provides connection to both digital I/O (option R&S NGP-K103) and analog input (option R&S NGP-K107). See Table 5-2.

Table 5-2: Pin configurations

DIO & analog input connector	Signal	Logical name	Value range	Pin number
	Analog input 1 to 4	ANA1	0 Vdc to 5 Vdc	16
		ANA2		8
		ANA3		15
		ANA4		7
	Analog ground	GND	0 Vdc	6, 14
	Digital ground	GND	0 Vdc	5, 13
	Digital trigger 1 to 8	DIO1	TTL	12
		DIO2		4
		DIO3		11
		DIO4		3
		DIO5		10
		DIO6		2
		DIO7		9
		DIO8		1

For more information, see chapter "Digital trigger I/O" and "Analog In adjustment" in the user manual.

Rear panel connectors (15, 16)

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.

The rear panel connector contains both outputs ("+", "-") and remote sense ("+Sense", "-Sense"). Connectors for channel 3 and channel 4 are only available for the 4-channel instrument.

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.

Kensington security slot (17)

A Kensington lock can be anchored to the R&S NGP800 power supply housing to secure it to a workstation mechanically.

6 Trying out the instrument

This chapter describes some basic functions that you can perform with the R&S NGP800 power supply series.

6.1 Selecting the channels

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

6.2 Setting the output voltage and current limit

1. Press [Home] key.
   The R&S NGP800 power supply displays the home window.

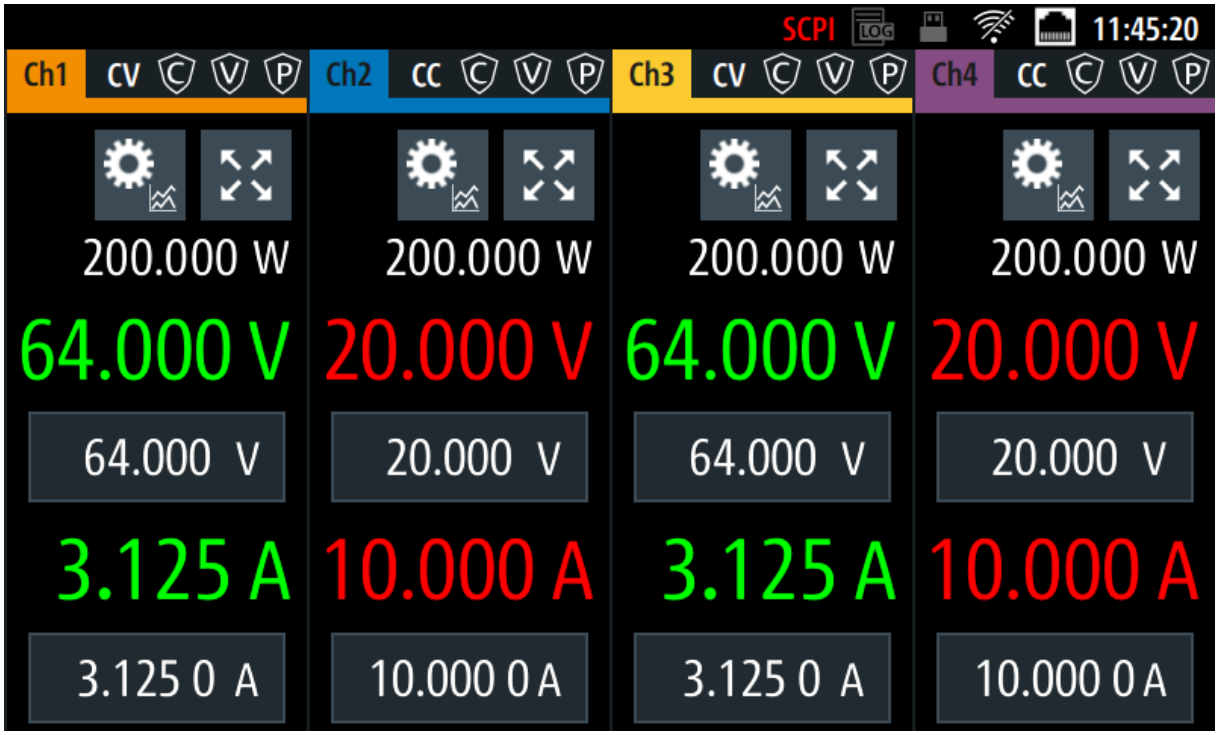
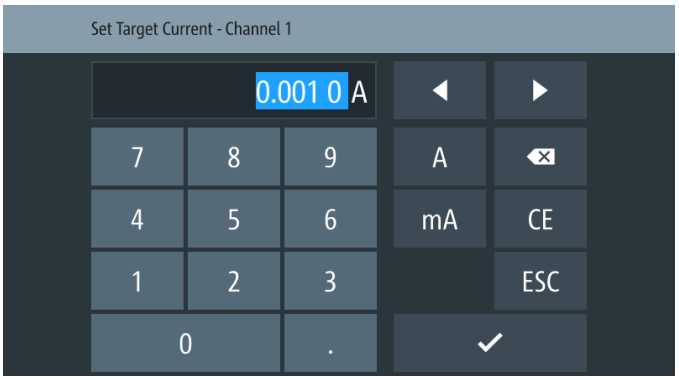


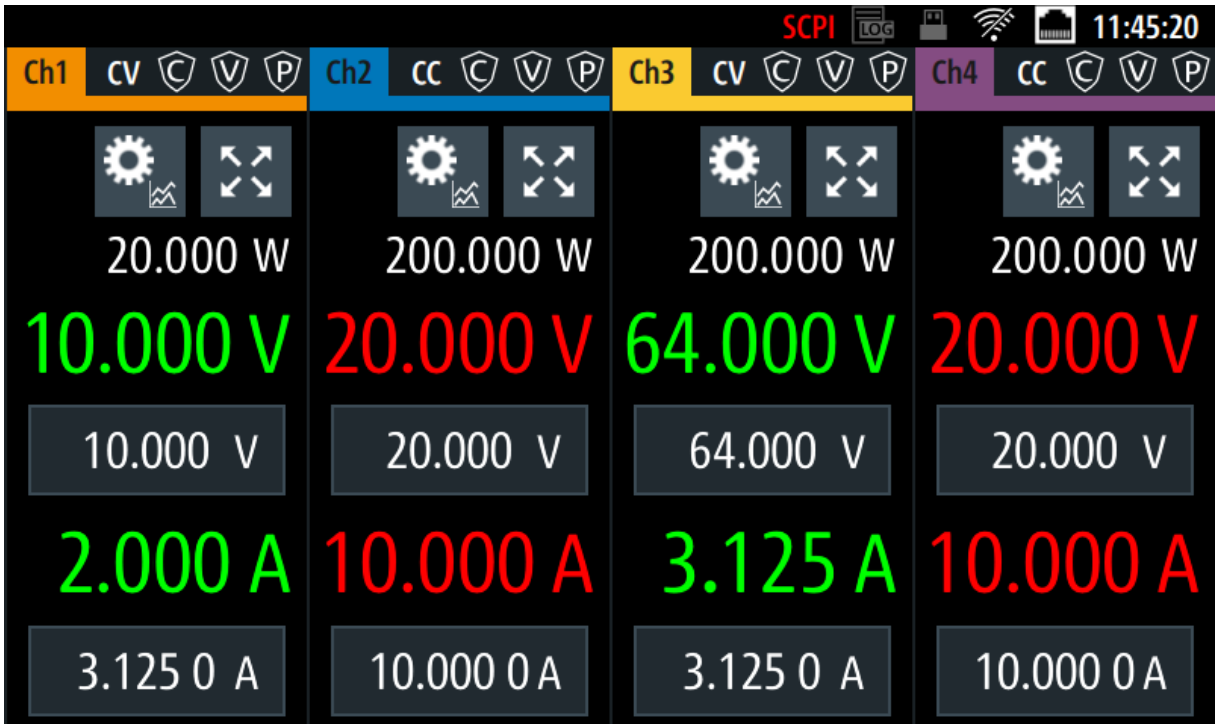
Figure 6-1: Home window

2. Select voltage or current parameter of the desired channel.

The R&S NGP800 power supply displays an on-screen keypad to set the value.



3. Enter the required value.
4. Confirm value with either a unit key or enter key, ✓ .
   The home window shows the updated voltage and current settings (see changes of voltage and current values in "Ch1").



5. Repeat for other channel if desired.

6.3 Activating the channels output

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

To activate the channel output, press the [Output] key on the front panel followed by the desired channel key or vice versa.

The R&S NGP800 power supply displays the actual voltage on the output channel and the actual current drawn by the load connected to the 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.

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

See the highlighted areas in Figure 6-2.

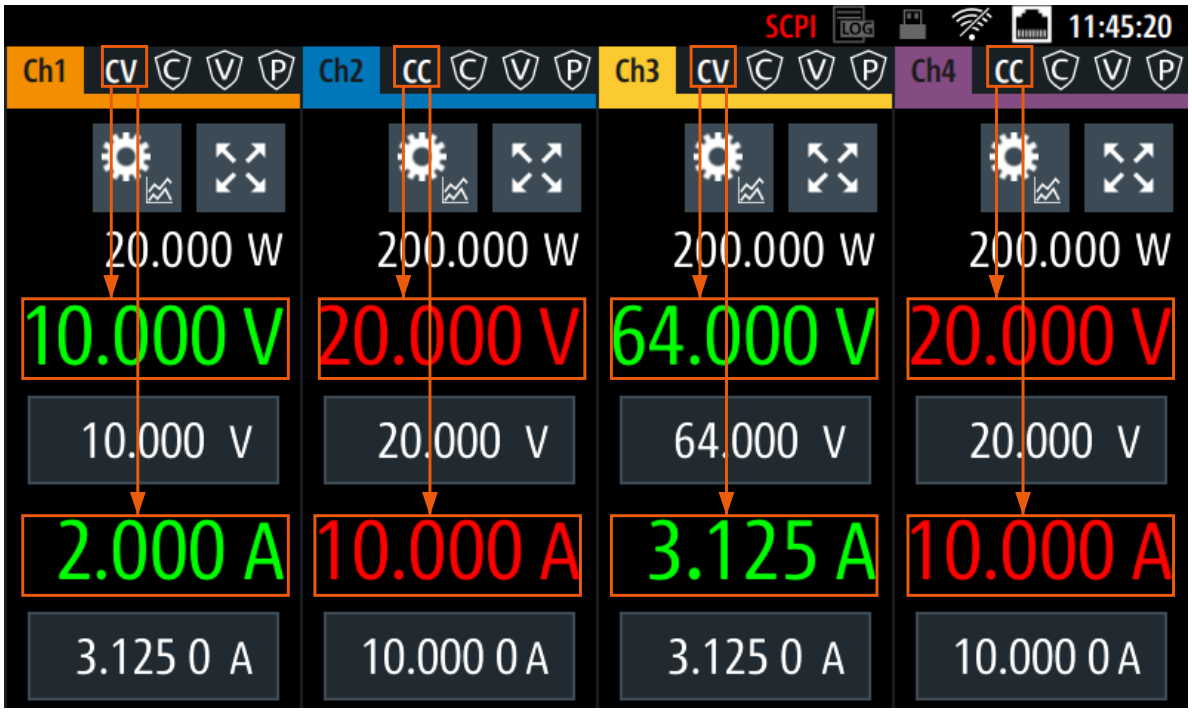


Figure 6-2: Font color in highlighted areas changes to green or red depending on the different operating modes of the instrument

6.4 Saving/Recalling of instrument settings

The R&S NGP800 can save instrument settings and screenshots. Both instrument settings and screenshots can be saved on a USB stick or internally in the instrument to non-volatile storage media.

1. Press [Settings] > "Device" > "Save/Recall Device Settings" > "Save Settings to File" to save current instrument settings.
2. Select the desired storage location and filename.
   Default location and filename `/int/settings/newSetting.rds` are used if no location and filename are entered.
3. Confirm the selection by selecting the "SAVE" softkey.
   The instrument settings are saved.
4. Press [Settings] > "Device" > "Save/Recall Device Settings" > "Recall Settings from File" to load instrument settings.
5. Select the desired file location and filename.
   The filemanager dialog of the selection location is displayed.
6. Select "Load" to load the instrument settings.
   The selected instrument settings are loaded.

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

For more information, see chapter "Save and recall" in user manual.

See also chapter "Screenshot" in user manual.

7 Instrument control

This chapter provides an overview on how to work with the R&S NGP800. 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.

7.1 Ways to operate the instrument

You can operate an R&S NGP800 in two ways:

- Manual operation
  Use the touchscreen and front panel controls to configure the R&S NGP800 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 53 for an overview of the interfaces provided for remote control.

7.2 Means of manual interaction

For manual interaction with the R&S NGP800, you have several methods that you can use as an alternative to perform a task:

- Touchscreen
  Touchscreen operation is the most direct way to interact with the instrument. Almost all control elements and actions on the screen are based on the standard operating system concept. You can tap any user interface element, set

parameters in dialogs, enter data using online keypads and swipe to scroll within a dialog.

– **Tapping**

Tap on the screen to select or toggle the value.

– **Swipe up and down**

Swipe up to scroll down and swipe down to scroll up the content in the menu or dialog box.

For more information on touchscreen behavior, see chapter "Using the touchscreen" in the user manual.

- Menu control, channel and output keys
  The menu control keys provide you with quick access to home window, instrument menu and shortcut key to user-defined functions. You can also access to the instrument menu via the channel display area in the home window, see Table 7-1.
  Instrument channel selection and output activation are only accessible via the respective front panel keys, these keys illuminate when activated.
  For a detailed description on the front panel keys, see section "Menu Controls" in the user manual.
- Navigation controls
  The navigation controls include a rotary knob and [Back] key which allow you to navigate in the home window, instrument menus or dialogs and also make value adjustment in the entry field.

This manual describes the manual interaction with the instrument using the touchscreen. It mentions the alternative methods using the keys on the instrument or the on-screen keypads if it deviates from the standard operating procedures.

Throughout the manual, the term "select" refers to any of the described methods, i.e. using a finger on the touchscreen or a key on the instrument or on a keyboard.

For basic instructions on how to control the R&S NGP800, see Chapter 7.2.2, "Accessing the functionality", on page 50.

7.2.1 Understanding the display information

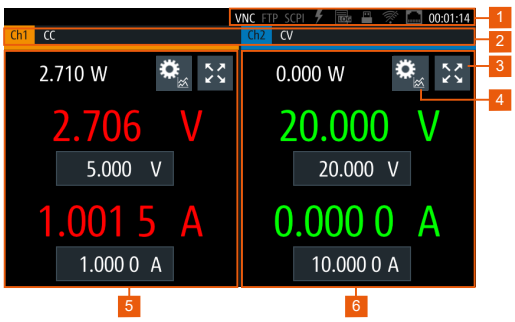
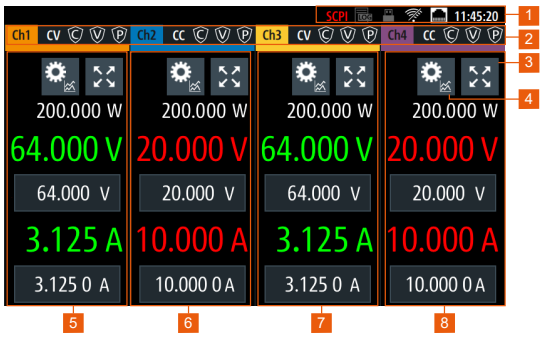
Depending on the instrument models, up to two or four home windows are shown on the screen layout. The respective channel settings and device status are displayed for each channel.

The home window of R&S NGP800 shows the channel display area and status bar information. With the access of "Expand/Collapse" softkey in the channel display area, the historical channel information of respective channel is displayed.

The channel display area shows the output voltage, current level and operating mode of the output.

For detailed information, see chapter "Operation Modes" in the user manual.

Table 7-1: Home window of R&S NGP800 models

Two-channel models: R&S NGP802, R&S NGP822	Four-channel models: R&S NGP804, R&S NGP824, R&S NGP814
	

- 1 = Device status bar
- 2 = Channel status bar
- 3 = Expand/Collapse softkey
- 4 = Settings softkey
- 5 = Channel display area of Ch1
- 6 = Channel display area of Ch2
- 7 = Channel display area of Ch3
- 8 = Channel display area of Ch4

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 at the top of the screen layout:

- Device status
- Channel status

Device status

The device status displays the state of the functions activated in the device.

Figure 7-1: Device status bar

Table 7-2: Device status bar information

Function	Description
Touchscreen	If touch input is disabled, the icon is displayed and highlighted in yellow. See chapter "User key" in the user manual.
Virtual networking computing, VNC	If VNC is enabled, the icon is highlighted in white. See chapter "VNC" in the user manual.
File transfer protocol, FTP	If FTP is enabled, the icon is highlighted in white. See chapter "FTP" in the user manual.
SCPI command	If a SCPI command is received successfully, the icon blinks once in white. If an error is in the SCPI error queue, the icon is highlighted in red. If no activity, icon is displayed in gray. See chapter "Remote control commands" in the user manual.
Trigger event	Icon blinks once in white when a trigger event occurs.
Data logging	If data logging is present, the icon is highlighted in white. If an error is present, the icon is highlighted in red. See chapter "Data logging" in the user manual.
USB	If USB device is busy, the icon is highlighted in white. If USB device is idle, the icon is highlighted in gray. See chapter "USB connection" in the user manual.

Function	Description
WLAN	Only visible if software option Wireless LAN is active and instrument with serial number below 110000. If connection is present, the icon is highlighted in white. If both WLAN and LAN connection are present, the icon is highlighted with a line cross over. If no connection or WLAN is disabled, the icon is highlighted in gray. See chapter "Wireless LAN connection" in the user manual.
LAN interface	If connected, the icon is highlighted in white. If no connection or an error is present in connection, the icon is highlighted in red. See chapter "Interfaces" in the user manual.
Time 02:57:32	Time displays in hh:mm:ss format. See chapter "Date and time" in the user manual.

Channel status

The channel status displays the state of the indicators available in the device channel.

Figure 7-2: Channel status bar

Table 7-3: Channel status bar information

Function	Description
Channel number	Channel number indication.
Operation mode	The R&S NGP800 has two operating modes: • CV: Constant voltage mode • CC: Constant current mode See chapter "Operation modes" in the user manual.
OCP	If enabled, the icon is highlighted in white. If triggered, the icon blinks. See chapter "Overcurrent protection (OCP)" in the user manual.

Function	Description
OVP	If enabled, the icon is highlighted in white. If triggered, the icon blinks. See chapter "Overvoltage protection (OVP)" in the user manual.
OPP	If enabled, the icon is highlighted in white. If triggered, the icon blinks. See chapter "Overpower protection (OPP)" in the user manual.
Arbitrary mode	If enabled, the icon is highlighted in white. If active, the icon blinks. See chapter "Arbitrary" in the user manual.
Ramp mode	If enabled, the icon is highlighted in white. If active, the icon blinks. See chapter "Ramp" in the user manual.
"Safety Limits"	If enabled, the icon is highlighted in white. See chapter "Safety limits" in the user manual.
"Output Delay"	If enabled, the icon is highlighted in white. The delay is the time between activation of the output and applying voltage to the output. See chapter "Delay" in the user manual.
Adjustment mode	If user adjustment is active, the icon is highlighted in red. See chapter "Adjustment" in the user manual.
Sense connection	If sense connection is detected, the icon is highlighted in white. See chapter "Remote sensing" in the user manual.
High impedance	If enabled, the icon is highlighted in white. See chapter "High impedance mode" in the user manual.
Reduce slew rate	If enabled, the icon is highlighted in white. See chapter Slew rate control in the user manual.
Tracking	If tracking is enabled, the icon is highlighted in white. See chapter "Tracking function" in the user manual.

7.2.1.2 Settings softkey

The "Settings" softkey, navigates to the instrument (device/channel) menu window. Alternate access to instrument menu is via the [Settings] key on the front panel. See also chapter "Settings key" in user manual.

Long press on the "Settings" softkey navigates to the graphical view window. For details, see chapter "Graphical view window" in the user manual.

For more information on "Settings" softkey behavior, see chapter "Using the touchscreen" in the user manual.

7.2.1.3 Expand/Collapse softkey

The "Expand/Collapse" softkey opens the detailed channel display area window with additional information, such as the channel historical information and the optional digital I/O trigger configuration. See Figure 7-4.

For more information on "Expand/Collapse" softkey behavior, see chapter "Using the touchscreen" in the user manual.

7.2.1.4 Channel display area

The channel display area shows the output power, voltage and current values and the corresponding operating mode (CC, CV) of the R&S NGP800 when the device output is turned on. See Chapter 7.2.1.6, "Operating mode", on page 46 for the different operating modes that the R&S NGP800 supported.

Each channel display area contains the Settings softkey which provides you the access to instrument menu and Expand/Collapse softkey which extended the channel display area with additional information, such as the channel historical information and digital I/O trigger configuration. See Chapter 7.2.1.5, "Historical channel information", on page 45.

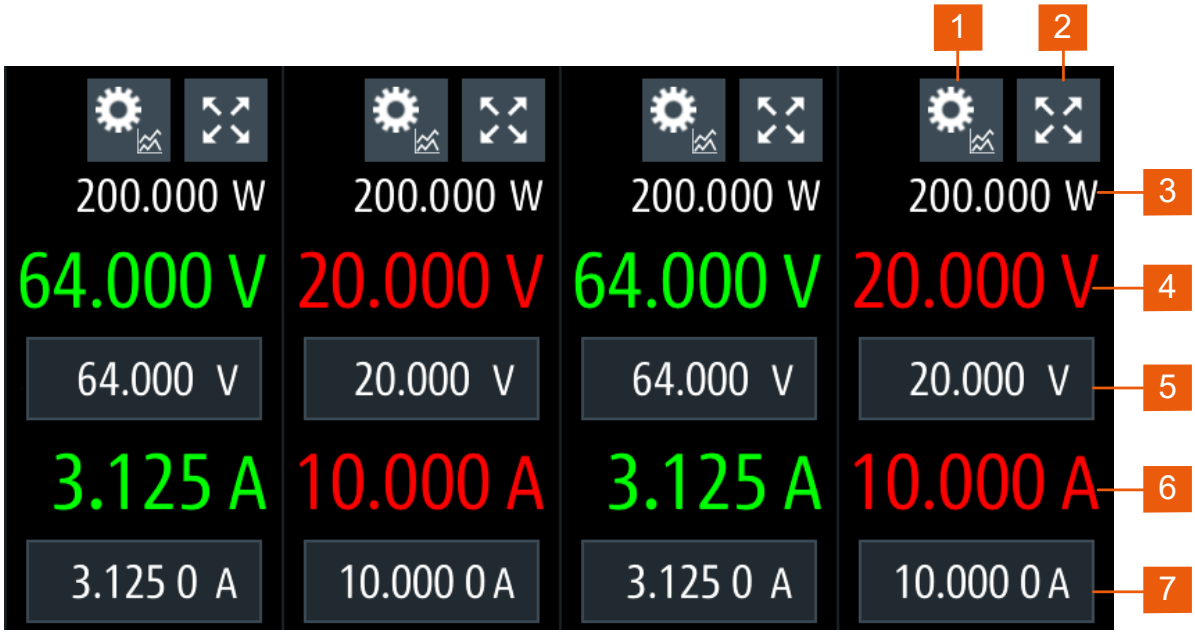


Figure 7-3: Channel display area for 4-channel model

1 = "Settings" softkey opens instrument menu window.
2 = "Expand/Collapse" softkey toggles between home window and the detailed channel display area window, see Figure 7-4
3 = Output power displays in watt
4 = Output voltage displays in volt with display resolution of three decimal points
5 = Set voltage level
6 = Output current displays in ampere with display resolution of up to four decimal points
7 = Set current level

7.2.1.5 Historical channel information

In the detailed channel display area window, the respective historical channel information displays on the right of the window shows the minimum, maximum and average values for power ("W"), voltage ("V") and current ("A") values. It also performs the calculation of energy result ("mWh") and number of samples collected for the result. To reset the historical channel information to zero value, select the reset softkey, . The statistics provides valid data for up to 365 days of continuous operation, after which the statistics is reset to zero.

With option R&S NGP-K103, the digital I/O trigger configuration of the instrument is available on the left of the window. See also "Digital I/O & analog input connector (14)" on page 31.

Select the "Expand/Collapse" softkey to revert to home window.

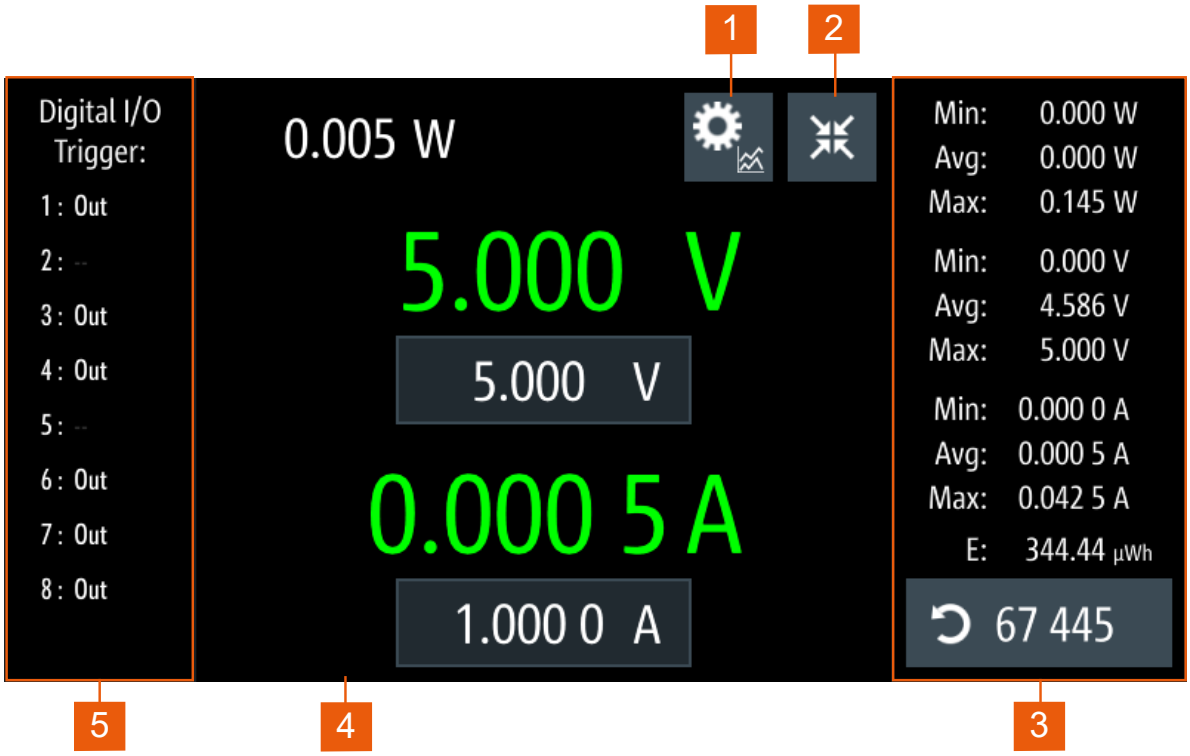


Figure 7-4: Detailed channel display area of a 4-channel instrument model

1 = Settings softkey
2 = Expand/Collapse softkey
3 = Historical channel information
4 = Channel display area of respective channel
5 = Digital I/O trigger configuration

To change the voltage or current value, see Chapter 7.2.3.1, "Entering numeric parameters", on page 52.

7.2.1.6 Operating mode

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.

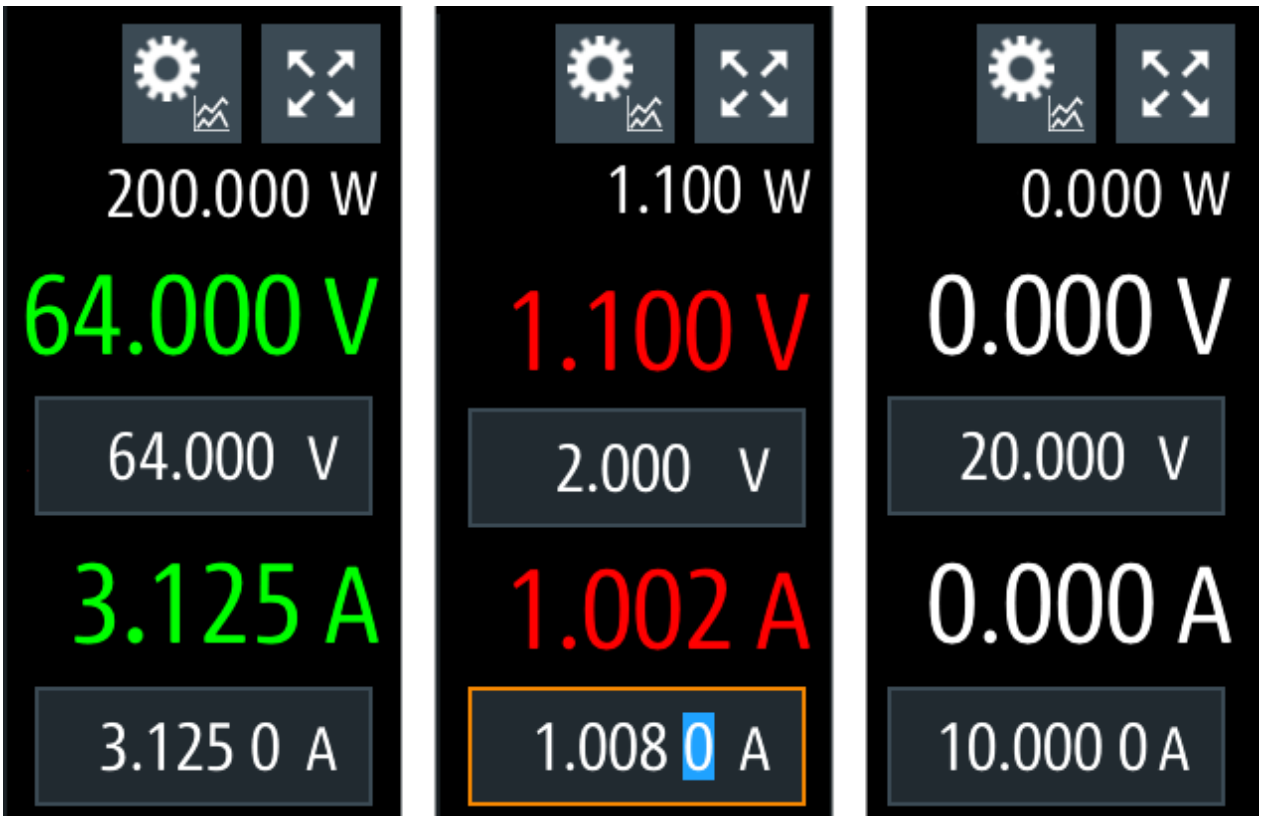


Figure 7-5: Color coding of difference operating conditions

Color	Operating mode	Description
☐	OFF mode	Output is OFF.
■	Editing mode	A solid blue cursor is shown when an item is selected.
■	CV mode	Active outputs are operated in a constant voltage mode.
■	CC mode	Active outputs are operated in a constant current mode.

7.2.1.7 Additional display characteristics

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

- Appearance of active elements
  - Active elements like On/Off switches, selected softkeys have a blue background. In channel display area, the selected element (Voltage or Current) is in editing mode.

– Selected element is framed or highlighted orange.
– Inactive elements are gray.

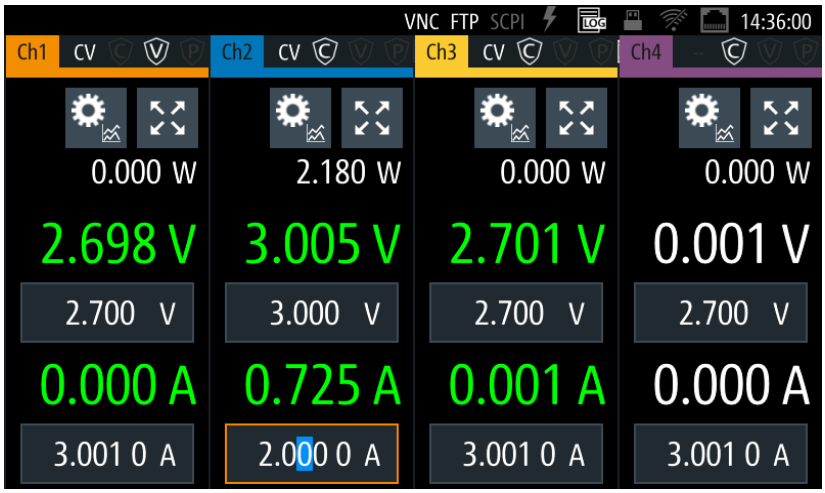


Figure 7-6: Appearance of active elements

- Menus and dialogs
  Both, menus and dialogs appear similar, and contain selection lists. Throughout this manual, a list of functions which lead you to the settings of this function is referred to as menu. The term dialog refers to the views that cover the parameters of a certain function. Some dialogs are divided into tabs with logically grouped parameters.
  The instrument functions are grouped into the various menus based on the categories of "Device" and respective channel menus. For more information, see chapter "Settings key" in the user manual.

Figure 7-7: Example of a menu

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

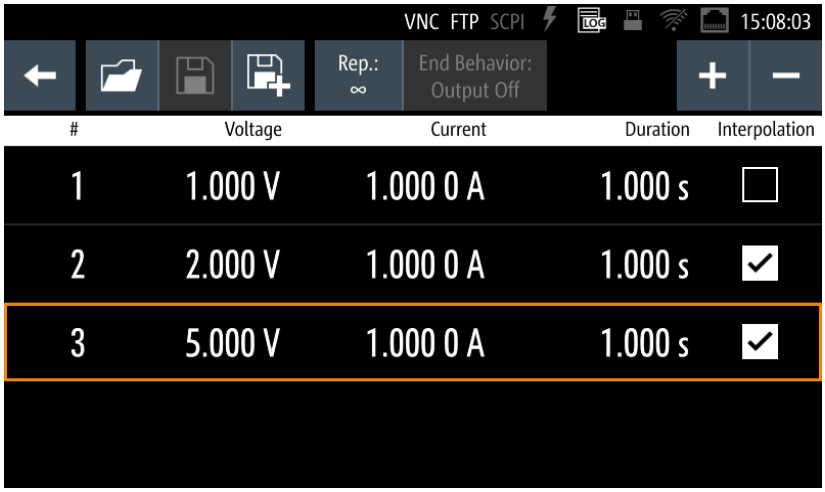


Figure 7-8: Example of a dialog

- Wizards
  The measurement wizard is provided to perform a sequence of standardized and recurring measurements with guided instructions during the measurement. All relevant parameters are set before the actual measurements and cannot be changed once the actual measurement procedure has begun. For more information, see chapter "Adjustment" in user manual.

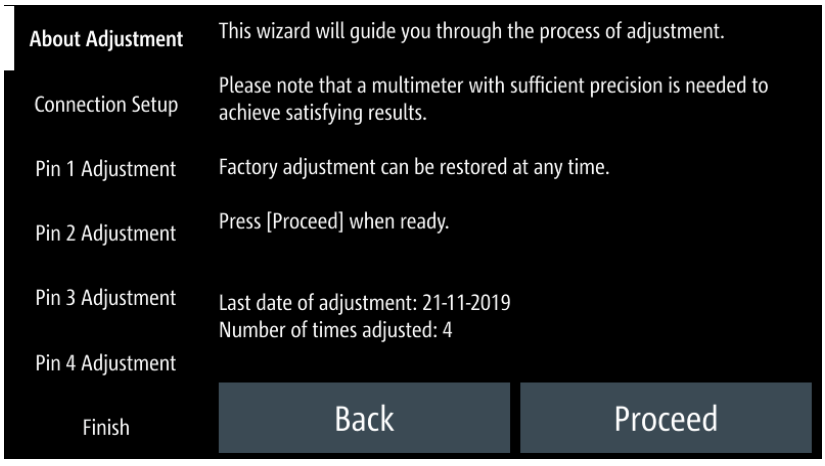


Figure 7-9: Example of an analog in adjustment wizard

- On-screen keypad
  The on-screen keypad appears if alphanumeric or numeric entry field is required. See Chapter 7.2.3.2, "Entering alphanumeric parameters", on page 53. For alphanumeric entry, you can select "_&123" or "ABC" on the on-screen keypad to toggle between the numeric and alphabetical entry.

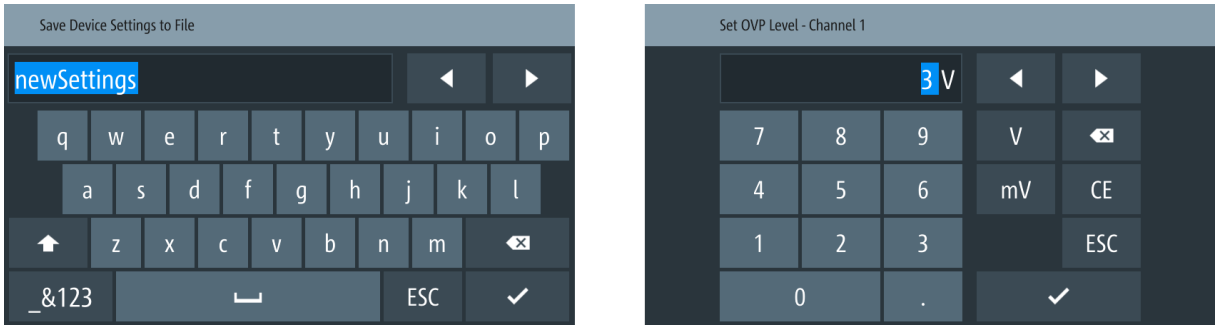


Figure 7-10: On-screen keyboard for alphanumeric and numeric entry field

- Info dialogs
  An "Info dialog" appears when an event generates a message. The generically assigned header shows the affected topic. The message describes the event, and short instructions lead you through the next steps.
- Scroll bar
  Appears when the list of selection parameters exceeds the size of the screen. Touch and swipe on the screen to scroll up and down.

7.2.2 Accessing the functionality

The master output control of respective channels is only possible via the front panel keys, all other instrument functionalities are provided in dialogs, menus or keypads, as known from computer programs. You can control the instrument intuitively with the touchscreen. This section provides an overview of the accessing methods.

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

To open the menu

1. Press [Settings] key at the front panel or select the "Settings" softkey in the channel display area.
   - If selection is via [Settings] key, the "Device" menu is displayed.
   - If selection is via the "Settings" softkey from the channel display area window, the respective channel menu is displayed.
2. To alternate between the "Device" and respective channel menu, select the corresponding tab on the top of the screen.
   The selection leads you either to a settings parameter directly, or to a dedicated dialog.

To open the dialog

► Select the corresponding menu item from the displayed menu, i.e. "Interfaces" > "USB Class"
The corresponding dialog is displayed.

To close or exit a dialog or menu

To close or exit a dialog or menu, you have several options.

1. To return to the home window, press the [Home] key.
2. To return to previous menu level or exit the menu if it is already at the main menu level, the R&S NGP800 provides several methods:
   - Softkey that prompts you to confirm or abort your selection, e.g. "Set" or "Cancel" automatically closes a dialog.
   - Select the "Back" softkey, ← in the left upper corner of the menu.
   - Press [Back] key or the rotary knob at the front panel.

To select a parameter in a dialog

If many parameters available, they are often provided in a list:

1. If necessary, scroll through the list.
   Tip: You do not need the focus exactly on the bar, touch and swipe the list.
2. As an alternative, you can use the rotary knob:
   a) Turn the rotary knob to select the parameter.
   b) Press the rotary knob to confirm your selection.

7.2.3 Entering data

For data input in dialogs, the instrument provides on-screen keypads for entering numeric and alphanumeric values. Thus, you can always set the parameters using the touchscreen. However, if the touchscreen is locked, data entry via navigation controls at the front panel works only in the home window and the detailed channel area display window, see "To enter values by using the front panel controls" on page 53.

Data can be entered using one of the following methods:

To correct an entry

1. To delete an entry, set the cursor to the right of the entry you want to delete.
   To select the position:
   a) Select it in the entry field directly.
   b) Use the cursor softkeys of the on-screen keypad.
2. On the on-screen keypad, select "Back" key, .
   The R&S NGP800 deletes the entry to the left of the cursor.
3. Enter your correction.

To complete an entry

To confirm the entry:

► On the on-screen keypad, confirm your entry with the "Enter" key, .
Alternatively, you can also confirm your entry with the respective unit key (if any) on the on-screen keypad.
Pressing the rotary knob also confirms the data entry.

To abort an entry

► On the on-screen keypad, select "ESC".
Pressing the [Back] key on the front panel also abort the data entry.
The on-screen keypad closes without changing the settings.

7.2.3.1 Entering numeric parameters

To enter values with the on-screen keypad

For numeric settings, the instrument displays the numeric keypad. The units specified correspond to the units of the parameter.

1. Enter the numeric value.
2. Select the unit (if any) to complete the entry.
   The value changed accordingly to the unit entry.
   If entry does not require a unit, confirm the value with the "Enter" key, .
   See also "To complete an entry" on page 52.

To enter values by using the front panel controls

You can also change the parameters with the navigation controls on the front panel, e.g if you have locked the touchscreen. However, these front panel controls work only In the home window and detailed channel display area window.

For details on locking and unlocking touchscreen, see "User key" in the user manual.

1. Navigates to the corresponding entry (voltage or current) by rotating the rotary knob on the front panel.
   Selected entry field is highlighted with an orange frame.
2. Press the rotary knob to select the entry.
   The on-screen keypad opens.
3. Press again the rotary knob to go into edit mode.
   The R&S NGP800 returns to home screen.
   To enter a value, use the controls as follows:
   a) Turning the rotary knob decreases or increases the currently selected digit (highlighted in blue).
   b) Pressing the rotary knob again switches to the next digit.
4. Press the [Back] key to complete the entry.

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.

Access and control are similar as described above, see "To enter values with the on-screen keypad" on page 52.

7.3 Remote control

In addition to operating the R&S NGP800 directly on the instrument, it is also possible to operate and control it from a remote PC.

Remote control interfaces

The R&S NGP800 provides several interfaces for remote control:

- Ethernet (LAN) interface

- USB standard interface
- IEEE-488 bus interface (GPIB) (option: R&S NG-B105)

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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