R&S®QPS Walk2000
Walk-Through Security Scanner
Getting Started

1179578202
Version 03

ROHDE&SCHWARZ
Make ideas real

This document describes the following products:

- R&S®QPS Walk2000 (order no. 1341.9999K02)
- R&S®QPS Walk2000 (order no. 1342.5100K02)

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1179.5782.02 | Version 03 | R&S®QPS Walk2000

Throughout this manual, products from Rohde & Schwarz are indicated without the ® symbol , e.g. R&S®QPS Walk2000 is indicated as R&S QPS Walk2000.

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 R&S QPS Walk2000 is a millimeter-wave security scanner designed to screen people at security checkpoints. The system automatically detects metallic and non-metallic objects of all types concealed inside or beneath clothing. Use the product only for its designated purpose. Observe the operating conditions and performance limits stated in the data sheet.

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 5. 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.

Using the product requires specialists or specially trained personnel. These users also need sound knowledge of at least one of the languages in which the user interfaces and the product documentation are available.

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 http://www.customersupport.rohde-schwarz.com.

Lifting, carrying and installing the scanner

Installation, setup and disassembly must be performed by trained personnel. Install the R&S QPS Walk2000 exactly as described in the installation manual. During the instal-

lation, make sure that the installation site is only accessible by people working on the installation.

The R&S QPS Walk2000 gate elements, the floorplate, the transport boxes and the server are heavy. Lifting and carrying heavy items can cause structural or muscular injuries. Heavy items can also cause other physical injuries like crushed body parts when they fall or tip over.

Because of its weight, at least two strong people are required to install or disassemble the system. If you have to move the pallets the R&S QPS Walk2000 is delivered on, always use a forklift.

The transport box is made of wood that can pose a risk of drawing splinters.

During transport, installation, disassembly or repair, wear appropriate protective clothing that complies with your local rules and regulations. If you are unsure of which equipment to use, ask your safety inspector.

We recommend to wear:

- Safety shoes with toe cap and ESD protection.
- Protective gloves

ESD protected shoes and gloves also protect the hardware from being damaged.

Installing cables

A R&S QPS Walk2000 installation consisting of the gate, operator touchscreen and server requires cable connections (power cables, LAN cables etc.). Secure all cables on the floor and cover them up.

Loose cables are a tripping hazard. Tripping on cables can cause physical injuries.

Properly covered cables also minimize the risk of cable damage.

Choosing the operating site

Only use the product indoors. The product casing is not waterproof. Water that enters can electrically connect the casing with live parts, which can lead to electric shock, serious personal injury or death if you touch the casing. If Rohde & Schwarz provides accessories designed for your product, e.g. a carrying bag, you can use the product outdoors.

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

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.

Take the following measures for your safety:

- Before switching on the product, ensure that the voltage and frequency indicated on the product match the available power source. If the power adapter does not adjust automatically, set the correct value and check the rating of the fuse.
- If a product has an exchangeable fuse, its type and characteristics are indicated next to the fuse holder. Before changing the fuse, switch off the product and disconnect it from the power source. How to change the fuse is described in the product documentation.
- Only use the power cable delivered with the product. It complies with country-specific safety requirements. Only insert the plug into an outlet with protective conductor terminal.
- Only use intact cables and route them carefully so that they cannot be damaged. Check the power cables regularly to ensure that they are undamaged. Also ensure that nobody can trip over loose cables.
- If the product needs an external power supply, use the power supply that is delivered with the product or that is recommended in the product documentation or a power supply that conforms to the country-specific regulations.
- Only connect the product to a power source with a fuse protection of maximum 20 A.
- 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.

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.

1.2 Labels on the product

Labels on the casing inform about:

- Personal safety, see "Meaning of safety labels" on page 7
- Product and environment safety, see Table 1-1
- Identification of the product, see Chapter 4.10, "Device ID", on page 18.

Table 1-1: Labels regarding product 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 "Disposing electrical and electronic equipment" on page 25.
	Take care when handling electrostatic sensitive devices.

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.

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 Regulatory information

The R&S QPS Walk2000 complies with the following regulations.

1.4.1 Regulations for the USA

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This equipment may only be operated indoors. Operation outdoors is in violation of 47 U.S.C. 301 and could subject the operator to serious legal penalties.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause interference.
- This device must accept any interference, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to pro-

vide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

1.4.2 Regulations for Canada

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

- This device may not cause interference.
- This device must accept any interference, including interference that may cause undesired operation of the device.

This Radar Surveillance Device shall be installed in a manner that minimizes radiated emissions beyond the property line of the area under surveillance.

This Radar Surveillance Device shall be operated only by military, law enforcement, emergency rescue or firefighting organizations that are under a local, provincial or federal authority. The equipment is to be operated only in providing services and for necessary training operations.

Cet appareil contient des émetteurs / récepteurs exemptés de licence conformes aux RSS (RSS) d'Innovation, Sciences et Développement économique Canada. Le fonctionnement est soumis aux deux conditions suivantes:

- Cet appareil ne doit pas causer d'interférences.
- Cet appareil doit accepter toutes les interférences, y compris celles susceptibles de provoquer un fonctionnement indésirable de l'appareil.

Ce dispositif de surveillance radar doit être installé d'une façon qui réduit les émissions rayonnées au-delà des limites de la zone surveillée.

Ce dispositif de surveillance radar ne doit être utilisé que par les forces armées, des organismes d'application de la loi, d'intervention d'urgence ou de lutte contre les incendies qui sont autorisés au niveau local, provincial ou fédéral. Le matériel doit être uniquement destiné à la fourniture de services et à la formation nécessaire.

2 Documentation overview

Safety instructions

Document number: 1178.9678.99

Contains safety instructions, operating conditions and further important information. A printed version is part of the delivery.

Installation manual

Document number: 1178.9649.02

Contains information about the installation of the system. This includes an installation guide, all tasks necessary to configure the hardware and software and procedures to check the system's operational readiness.

User manual

Document number: 1178.9684.02

Contains information about the operation of the system. This includes the startup and shutdown procedure, an overview and description of all controls and interface elements of the hardware and software and a description of possible scanning procedures.

User reference

Document number: 1179.0474.02

Contains a short overview of the scan workflow.

Service manual

Document number: 1179.1187.02

Contains information about preventive and corrective maintenance. This includes an overview of the system components, a troubleshooting guide and a guide to verify the functionality of the system.

Data sheet and product brochure

Document number (datasheet): 3608.1946.22

Document number (brochure): 3608.1946.12

Contains the technical specifications of the R&S QPS Walk2000, its options and accessories.

Open source acknowledgment (OSA)

Contains verbatim license texts of the open source software used in the system.

3 Welcome

The R&S QPS Walk2000 is a walk-through security scanner designed to detect objects of any material (metal, plastic, liquid etc.) that are concealed in or underneath clothing. It facilitates quick screening of a large number of people in a safe manner, while maintaining personal privacy.

The main features of the R&S QPS Walk2000 are:

- Walk-through screening gate.
- Safe frequency band.
- Automatic detection of hidden items.
- High penetration through clothing.
- Superior body coverage due to unique design.
- Low maintenance cost (no moving parts).
- Intuitive user interface.

4 Scanner tour

The R&S QPS Walk2000 is a millimeter wave imaging system that uses an ultra wide band (UWB) signal to create a 3D structure of people walking through the gate.

The complete system consists of the following components:

- A gate that contains all the measuring electronics and a computer that controls the software for the user interface.
- A touchscreen to operate the system using a graphical user interface (GUI).
- A server that processes the captured data.

Parts of delivery

- 1 x gate (incl. floor plate)
- 1 x server
- 1 x touchscreen
- 1 x stand
- 4 x power cables
- 1 x HDMI cable
- 1 x USB cable
- 1 x optical fiber cable

4.1 Gate controls and connectors

The R&S QPS Walk2000 has several controls and connectors. All controls and connectors are located behind a protective cover on the side of the master panel. You can open the protective cover by pulling it downward by the handle.

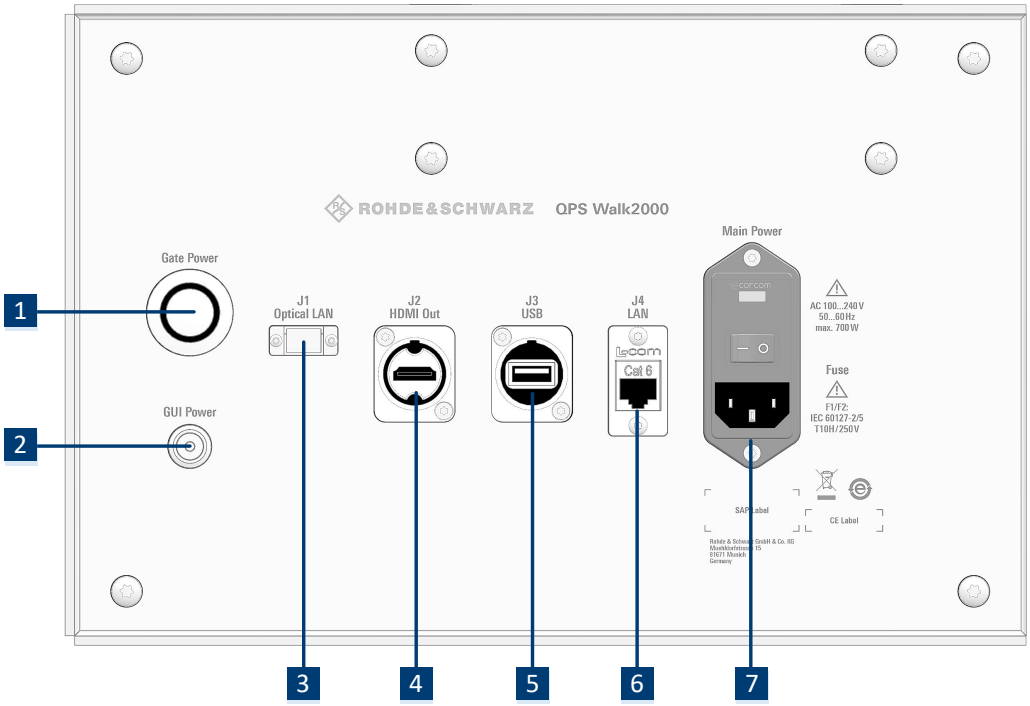

Figure 4-1: Gate controls and connectors

1 = Gate power button
2 = GUI power button
3 = Optical fiber connector (J1)
4 = HDMI connector (J2)
5 = USB port (J3)
6 = LAN port (J4)
7 = Main power switch and connector

For a comprehensive description of the connectors and controls of the server, refer to its documentation available on the internet: www.dell.com

4.2 AC power supply

The AC power supply and the main power switch are located in a unit behind a protective cover on the side of the R&S QPS Walk2000.

The main power switch has the following states.

- Position "I": The R&S QPS Walk2000 is supplied with power.
- Position "O": The R&S QPS Walk2000 is disconnected from the power source.

For more information about taking the R&S QPS Walk2000 into operation, see Chapter 5, "Preparing for use", on page 19.

For more information about replacing the fuse, see Chapter 6.3, "Replacing fuses", on page 24.

4.3 Gate power button

The gate power button turns the measuring electronics on and off.

The power button has the following states:

- Illuminated (green): Measuring electronics are on.
  A long press of the button turns off the electronics.
- Unilluminated: Measuring electronics are off.
  A short press of the button turns on the electronics.

4.4 GUI power button

The GUI power button turns the computer that runs the user interface on and off. The computer that runs the user interface is integrated in the R&S QPS Walk2000.

Note that you have to turn on the touchscreen that displays the graphical user interface separately.

The GUI power button has the following states:

- Illuminated (blue): GUI computer is running.
- Unilluminated: GUI computer is off.

4.5 Optical fiber connector (J1)

The optical fiber connector provides the data interface to the server.

4.6 HDMI connector (J2)

The HDMI connector provides the interface to the graphical user interface (touch-screen).

4.7 USB connector (J3)

The USB connector provides the interface to the graphical user interface (touch-screen).

4.8 LAN port (J4)

The LAN port is reserved for later use.

4.9 Signposts (status lights)

The entrance of the scan area has two signposts with status lights (one on each side of the entrance). These status lights can take on different colors. Each color represents a specific state of the gate.

4.10 Device ID

The unique device identifier is provided on a barcode sticker on the side of the primary panel of the system. The device ID is made up of the device order number and a serial number (for example 1341.9999K02-123456-aa or 1342.5100K02-123456-aa).

You can find the sticker with the device ID on the connector board.

5 Preparing for use

For a comprehensive description about installing the R&S QPS Walk2000, refer to the installation manual that is part of the delivery.

For a comprehensive description about operating the R&S QPS Walk2000, refer to the user manual.

5.1 Connecting system components

The R&S QPS Walk2000 consists of several components that you need to connect to each other. All components (incl. cables) are part of the delivery.

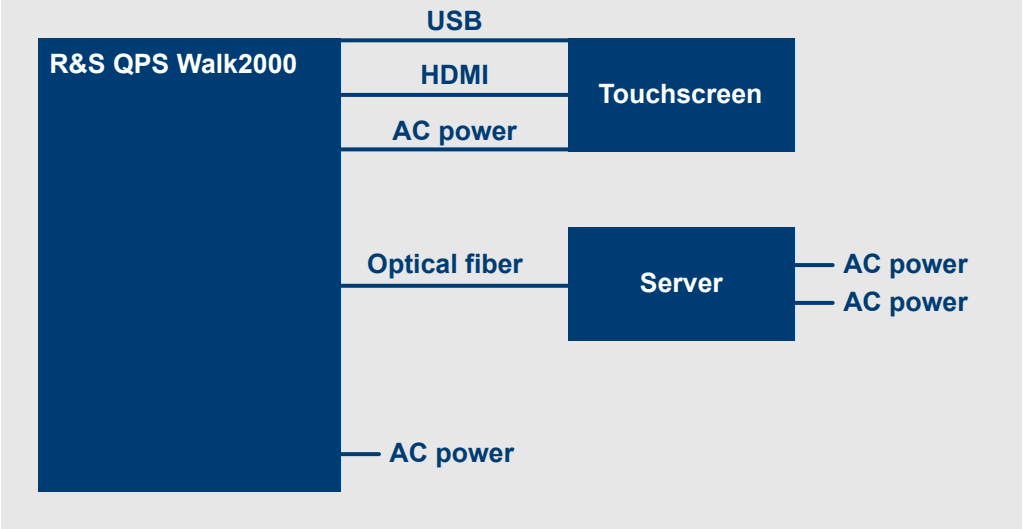

Figure 5-1: Overview of connections

Network connections

Before connecting the product to a local area network (LAN), consider the following:

- Install the latest software to reduce security risks.
- For internet or remote access, use secured connections if applicable.
- Ensure that the network settings comply with the security policies of your company. Contact your local system administrator or IT department before connecting your product to your company LAN.
- When connected to the LAN, the product can potentially be accessed from the internet, which can be a security risk. For example, attackers might misuse or damage the product.

Connecting the R&S QPS Walk2000

1. Connect the touchscreen to the R&S QPS Walk2000.
   a) Establish a USB connection between touchscreen and R&S QPS Walk2000.
   b) Establish an HDMI connection between touchscreen and R&S QPS Walk2000.
   c) Establish a power connection between touchscreen and R&S QPS Walk2000.
2. Connect the server to the R&S QPS Walk2000.
   a) Establish a network connection with the fiber optical cable between the server and the R&S QPS Walk2000.
   b) Optional: connect the server to your LAN.
   Always complete all network and data connections before connecting the components to the power source.
3. Connect all components to the power source (AC outlets with a ground contact).
   Note that the server requires a connection to two AC outlets.

   After you have connected all components, you can turn on and use the R&S QPS Walk2000.

5.2 Startup and shutdown

Starting the R&S QPS Walk2000

Before you turn on the system, make sure that all components are connected correctly.

For more information about the system connections, see Chapter 5.1, "Connecting system components", on page 19.

1. Turn on all components of the system:
   - Main power with the switch on the primary panel (position "I").
   - Gates with the power button on the primary panel to supply the electronics with power. The light around the "Gate Power" button turns green.
   - Mini PC with the GUI power button on the primary panel.
   - Operator touchscreen on the monitor itself.
   - Server with the power switch located on the front panel of the server.
2. Log into the system with your credentials.
3. Check if the touchscreen shows the graphical user interface (GUI).
   If it does not, restart the mini PC with the GUI power button.
4. Check if the communication between the gate and the server is working.
5. Check if the scanning functionality is working properly.
6. Optional: If the scanning functionality does not work properly (red "Power" icon), initiate a self-test and calibration.

During the self-test and calibration, the light at the gate entrance is illuminated blue. This process takes a few minutes. When calibration is done, the lights at the gate entrance change their color (usually yellow).

7. Check if the error log is empty.
8. Check if the frame count is increasing continuously.
9. Check the signal strength bar. The signal strength bar should be green and stable when the gate is empty.
10. Wait for about 5 minutes before you start scanning people.
    After that time period, scan someone. While the gate is occupied, the signal bar should turn red and return to green when the scanned person exits the gate.

Shutting down the R&S QPS Walk2000

Shutting down the system requires the corresponding user rights.

1. Log into the system with an account type that can shut down the system.
2. Enter the "Settings" menu.
3. Select "System Shutdown".
   The R&S QPS Walk2000 automatically shuts down all system components (gates, touchscreen and server).
4. Turn off the main power with the switch on the primary panel (position "O").
5. Disconnect all power cables from the power source.

6 Maintenance

The R&S QPS Walk2000 does not require regular maintenance. It only requires occasional cleaning.

6.1 Calibration and self-test

The R&S QPS Walk2000 tests and calibrates itself on every start up of the "GUI Power" and on an ongoing basis when the scan functionality is running. The self-test and calibration take a few minutes. If it becomes necessary (for example if the "Signal Bar" is red even if the gate is empty), you can also initiate a calibration via the "Power" icon.

For calibration, the gate must be empty.

You can initiate a self-test when the "Power" icon is red.

1. If the "Power" icon is green: Select the "Power" icon.
   The "Power" icon turns red.
2. Select the red "Power" icon.

   The status lights on the gate and the touchscreen turn blue and remain blue until the process ends.
3. Wait a few minutes until the self-test and calibration are done.

6.2 Cleaning

Cleaning the gate

Clean the inside of the gate with a lint-free duster. You can remove stubborn dirt with a damp rag.

Cleaning the platform

Clean the platform with a broom or vacuum cleaner. Be careful not to damage the gate.

Remove any stubborn dirt using a damp rag. You can add a neutral, non-abrasive cleaning agent to the cleaning water.

Make sure that the platform does not become too damp during cleaning. Remove any escaped liquid (including water) immediately.

Do not clean the platform with a machine.

Server

Clean the server with a lint-free duster.

Touchscreen

Clean the touchscreen using a soft, lint-free dust rag. Do not use chemical cleaning agents or solvents (alcohol, acetone, cellulose lacquer thinners or similar agents). Remove fingerprints with a mild glass cleaner.

6.3 Replacing fuses

The power supply of the R&S QPS Walk2000 has two fuses. In case one of them blows, you can replace it with a fuse by the same type and rating. The fuse type is: IEC 60127-2/5 T10H/250 V.

1. **WARNING!** Risk of electric shock. The fuse is part of the main power supply. Handling the fuse while the R&S QPS Walk2000 is connected to the power source can cause an electric shock.

   Disconnect the R&S QPS Walk2000 from the power source.
2. Open the hatch of the AC power supply with a flat head screwdriver.
   The fuse holder hatch opens downwards.
3. Take out the fuse holder.
4. Check the condition of the fuse.
5. Replace the blown fuse.
6. Insert the fuse holder in the power supply.
7. Close the hatch.
8. Reconnect the R&S QPS Walk2000 to the power source.

6.4 Storage

Protect the R&S QPS Walk2000 against dust. Ensure that the environmental conditions, e.g. temperature range and climatic load, meet the values specified in the data sheet.

We recommend to use the original packaging to store the R&S QPS Walk2000. If the original packaging is not available, use sufficient padding to prevent the scanner from moving around inside the box.

6.5 Transport

Lifting and carrying

See "Lifting, carrying and installing the scanner" on page 5.

Packing

Use the original packaging material designed for the R&S QPS Walk2000.

If you do not have the original packaging, use similar materials that provide the same level of protection.

Securing

When moving the R&S QPS Walk2000 in a vehicle or using transporting equipment, make sure that the R&S QPS Walk2000 is properly secured. Only use items intended for securing objects.

Transport altitude

The maximum transport altitude without pressure compensation is 4500 m above sea level.

6.6 Disposal

Rohde & Schwarz is committed to making careful, ecologically sound use of natural resources and minimizing the environmental footprint of our products. Help us by disposing of waste in a way that causes minimum environmental impact.

Disposing electrical and electronic equipment

A product that is labeled as follows cannot be disposed of in normal household waste after it has come to the end of its service life. Even disposal via the municipal collection points for waste electrical and electronic equipment is not permitted.

Figure 6-1: Labeling in line with EU directive WEEE

Rohde & Schwarz has developed a disposal concept for the eco-friendly disposal or recycling of waste material. As a manufacturer, Rohde & Schwarz completely fulfills its

obligation to take back and dispose of electrical and electronic waste. Contact your local service representative to dispose of the product.

7 Troubleshooting

General troubleshooting

A red error icon indicates that an error has occurred. The first step in this case that we recommend, is to start a self-test and calibration.

1. Select the "Power" icon to turn off the scan.

   The "Power" icon turns red.

2. Select the "Power" icon again.

   The R&S QPS Walk2000 initiates the self-test and calibration routine, which takes a few minutes. The lights on the R&S QPS Walk2000 turn blue in this time. Scanning people is not possible.
   If the R&S QPS Walk2000 still shows an error after calibration, contact your local service provider.

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

Glossary: Terms and definitions

A

Avatar: Anonymous representation of a human body that shows the scan results. The color of the avatar depends on the scan results.

G

Gate: Part of the system through which people walk. The gate consists of two panels.

T

Touchscreen: Monitor with touch functionality to control the scan workflows.