R&S®TSMA-BP
Battery Pack Unit
Getting Started

1177588502

ROHDE&SCHWARZ

Getting Started

Version 05

This manual describes the following R&S®TSMA accessory:

- R&S®TSMA-BP Battery Pack Unit (1523.8009.02)

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1177.5885.02 | Version 05 | R&S®TSMA-BP

The following abbreviations are used throughout this manual: R&S®TSMA-BP Battery Pack Unit is abbreviated as R&S TSMA-BP Battery Pack Unit.

Contents

1 Safety Information

The product documentation helps you use the R&S TSMA-BP Battery Pack Unit safely and efficiently. Follow the instructions provided here and in the printed "Basic Safety Instructions". Keep the product documentation nearby and offer it to other users.

Intended use

The R&S TSMA-BP Battery Pack Unit is intended for the development, production and verification of electronic components and devices in industrial, administrative, and laboratory environments. Use the R&S TSMA-BP Battery Pack Unit 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 about the potential dangers and gives instructions how to prevent personal injuries or damage caused by dangerous situations. Safety information is provided as follows:

- The printed "Basic Safety Instructions" provide safety information in many languages and are delivered with the R&S TSMA-BP Battery Pack Unit.
- Throughout the documentation, safety instructions are provided when you need to take care during setup or operation.

2 Documentation Overview

This section provides an overview of the R&S TSMA-BP Battery Pack Unit user documentation. Unless specified otherwise, you find the documents on the R&S TSMA-BP Battery Pack Unit product page at:

www.rohde-schwarz.com/manual/tsmx

2.1 Getting Started Manual

Introduces the R&S TSMA-BP Battery Pack Unit and describes how to set up and start working with the product. Includes basic operations, typical measurement examples, and general information, e.g. safety instructions, etc. A printed version is delivered with the instrument.

2.2 User Manuals and Help

Contains the description of all instrument modes and functions. Includes the contents of the getting started manual .

2.3 Basic Safety Instructions

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

2.4 Data Sheets and Brochures

The data sheet contains the technical specifications of the R&S TSMA-BP Battery Pack Unit. It also lists the firmware applications and their order numbers, and optional accessories.

The brochure provides an overview of the instrument and deals with the specific characteristics.

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

2.5 Release Notes and 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.

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

3 Key Features

The R&S TSMA-BP Battery Pack Unit allows to enhance the R&S TSMA instrument to a portable measurement solution based on a battery powered system.

Key Features

- Power Supply for R&S TSMA in portable applications
- Hot-swap support for endless portable mode
- In-bay charging feature with smart battery controller
- Charging display via LED and monitoring window

4 Preparing for Use

⚠ WARNING

Risk of injury due to disregarding safety information

Observe the information on appropriate operating conditions provided in the data sheet to prevent personal injury or damage to the instrument. Read and observe the basic safety instructions provided with the instrument, in addition to the safety instructions in the following sections. In particular:

- Do not open the instrument casing.

NOTICE

Risk of instrument damage during operation

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

- The instrument is dry and shows no sign of condensation.
- The instrument is positioned as described in the following sections.
- Signal levels at the input connectors are all within the specified ranges.

4.1 Unpacking and Setting Up the Instrument

The following section describes how to set up the instrument.

NOTICE

Risk of instrument damage

Note that the general safety instructions also contain information on operating conditions that prevent damage to the instrument. The instrument's data sheet can contain additional operating conditions.

Check the equipment for completeness using the delivery note and the accessory lists for the various items. Check the instrument for any damage. If there is damage, immediately contact the carrier who delivered the instrument. Make sure not to discard the box and packing material.

Packing material

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

Accessory list

The following items are included with shipment of the R&S TSMA-BP Battery Pack Unit:

- R&S TSMA-BP Battery Pack Unit (R&S TSMA-BP, R&S No. 1523.8009.02)

The following items are optional and must be ordered separately:

- Battery for R&S TSMA-BP Battery Pack Unit (R&S TSMA-BAT, R&S No. 1523.8021.03)
  Li-ion battery RRC2054 (15.0 V / 3200 mAh, 48.0 Wh)
- Charger for batteries (R&S TSMA-BC2, R&S No. 1523.8015.02)
  Dual charger for batteries including country specific power cord
  Model: RRC PMC02A
  U_{in} = 100-240 V AC, max. 65 W

Only Li-ion battery of the type RRC2054 may be used!

4.2 Inserting a Battery in the R&S TSMA-BP Battery Pack Unit

In order to run the R&S TSMA via battery pack, insert the batteries into the R&S TSMA-BP Battery Pack Unit.

Make sure, that the batteries are inserted in the correct orientation.

Figure 4-1: R&S TSMA-BP Battery Pack Unit - Battery Orientation

1 = Battery insert orientation

4.3 Connecting the R&S TSMA-BP Battery Pack Unit with R&S TSMA

In order to use the R&S TSMA with the R&S TSMA-BP Battery Pack Unit, the following steps must be performed.

The R&S TSMA-BP Battery Pack Unit may be used only with closed battery cover.

1. Attach the R&S TSMA base unit with the bottom side (see Figure 4-3) on top of the R&S TSMA-BP (see Figure 4-2).

Figure 4-2: R&S TSMA-BP

1 = Connectors for R&S TSMA base unit

Figure 4-3: R&S TSMA Base Unit (bottom side)

1 = Connectors for R&S TSMA-BP

2. Move the R&S TSMA base unit to the front side (2) until the connectors are locked.

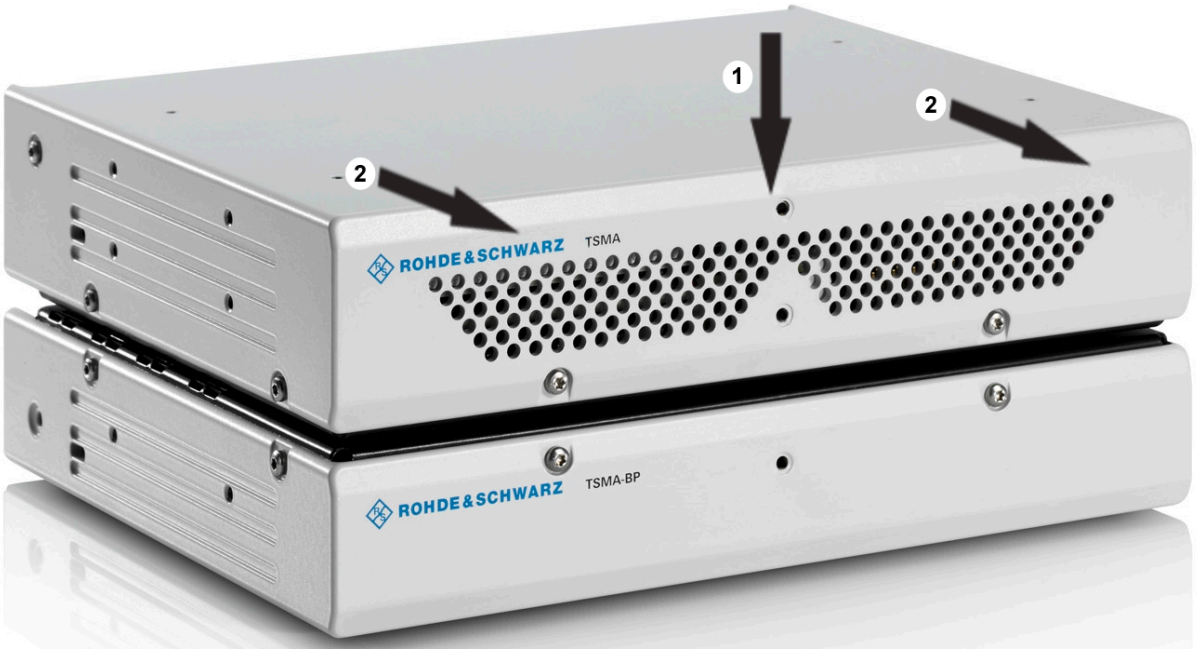

Figure 4-4: Connected R&S TSMA Base Unit and R&S TSMA-BP

1 = Vertical attachment of R&S TSMA base unit (bottom) with R&S TSMA BP (top)
2 = Move T&S TSMA base unit to the front side

3. Lock the interconnection using the lock (3).

Figure 4-5: Connection of R&S TSMA with R&S TSMA-BP Battery Pack Unit

1 = R&S TSMA Base Unit
2 = R&S TSMA-BP Battery Pack Unit
3 = Lock (front side)

4. Via the cable (3), you have to connect the DC IN connector on the R&S TSMA (1) with the TSMA connector (7 pins) on the R&S TSMA-BP Battery Pack Unit (2).

Figure 4-6: Cabling of R&S TSMA with R&S TSMA-BP Battery Pack Unit

1 = DC IN Connector of R&S TSMA Base Unit
2 = TSMA Connector R&S TSMA-BP Battery Pack Unit
3 = Interconnection Cable (R&S TSMA Base Unit <-> R&S TSMA-BP Battery Pack Unit)

Note: The Interconnection cable (3) is included in the delivery package. The cable plugs are marked at both sides with a red spot.

Figure 4-7: Cable

Connected at the DC IN (1) of the R&S TSMA, this red spot must face upwards, at the TSMA connector (2) of the R&S TSMA-BP Battery Pack Unit it must face downwards.

The R&S TSMA Base Unit boots as soon as the R&S TSMA-BP Battery Pack Unit (including charged batteries) is connected with the R&S TSMA via the connection cable (3).

4.4 Connecting the R&S TSMA-BP Battery Pack Unit with External Power Supply

The connection of an external DC power supply offers the following possibilities:

- Operating the R&S TSMA Base Unit via the power supply
- Recharging the batteries in case the R&S TSMA Base Unit is switched off

In order to recharge the batteries of the R&S TSMA-BP Battery Pack Unit without a separate charger, connect the R&S TSMA-BP Battery Pack Unit with an external power supply.

The external recharging of the batteries is only allowed via the separate charger (R&S TSMA-BC2, R&S No. 1523.8015.02).

The following steps must be performed.

1. Connect the R&S TSMA Base Unit (1) with the R&S TSMA-BP Battery Pack Unit (2) using the connection cable (3).

   Note: In this case, the R&S TSMA Base Unit will boot immediately.

2. Connect the DC OUT of the AC power supply (R&S TSMA-Z1, R&S No. 1523.8450.02) with the R&S TSMA-BP Battery Pack Unit (4) with the adapter cable (5).

3. Connect the adapter cable (5) with the AC power supply (R&S TSMA-Z1).

   In this case, the TSMA is supplied via the AC power supply and the batteries will be recharged slowly. If the R&S TSMA is switched off, the batteries will be recharged.

Figure 4-8: Connecting the R&S TSMA-BP Battery Pack Unit with a AC power supply

1 = DC IN Connector R&S TSMA Base Unit
2 = TSMA Connector R&S TSMA-BP Battery Pack Unit
3 = Interconnection Cable (R&S TSMA Base Unit <-> R&S TSMA-BP Battery Pack Unit
4 = External DC Connector R&S TSMA-BP Battery Pack Unit
5 = Adapter cable (TSMA-Z1 <-> Battery Pack DC IN)
6 = DC OUT (AC Power Supply TSMA-Z1)

5 Operation

The R&S TSMA-BP Battery Pack Unit allows to enhance the R&S TSMA instrument to a portable measurement solution based on a battery powered system.

The R&S TSMA-BP Battery Pack Unit contains two rechargeable batteries (not included in the delivery), which can be charged directly in case the R&S TSMA-BP Battery Pack Unit is connected to power (via cigarette lighter in a vehicle or an external power supply). Alternatively, a separate battery charger (not included) can be used for recharging the batteries.

In the standard operation mode, it is recommended to use always two batteries with a comparable charging state. (The batteries will be discharged always in parallel.)

The charging state of the battery is visible on the display (1).

Figure 5-1: R&S TSMA-BAT (R&S No. 1523.8021.03)

1 = Charging state display

The batteries can be exchanged during operation (hot-swap mode). In this case, at least one battery must be always in the R&S TSMA-BP Battery Pack Unit.

Do not remove both batteries at the same time.

When inserted in the bay of the R&S TSMA-BP Battery Pack Unit, the battery state can be displayed via the following possibilities:

- The battery state is displayed in the web interface of the R&S TSMA. For details, refer to "R&S TSMA Autonomous Mobile Network Scanner - User Manual" (R&S No. 1177.5610.02).
- The battery status is displayed via the two LEDs on the rear side of the R&S TSMA-BP Battery Pack Unit.

Figure 5-2: R&S TSMA-BP Battery Pack Unit - Status LEDs

1 (P501) = Status LED for battery 1
2 (P500) = Status LED for battery 2

Table 5-1: R&S TSMA-BP Battery Pack Unit LED states and their meaning (LED 1 and LED 2)

Color	State	Comment
---	OFF	BAT 1/2 not present
blue	ON	battery charge 100 - 50 %
orange	ON	battery charge 10 - 50
red	ON	battery charge < 10 %, buzzer alarm on mainboard
green	ON	**For R&S TSMA Firmware < 03.00.11.00** battery charged **For R&S TSMA Firmware ≥ 03.00.11.00** battery charging / external DC connected
green	BLINKING (0,5 Hz)	**For R&S TSMA Firmware < 03.00.11.00** battery charging / external DC connected **For R&S TSMA Firmware ≥ 03.00.11.00** battery charged
red	BLINKING (0,5 Hz)	battery error
white (RGB)	BLINKING (0,5 Hz)	Busy (Initialization / communication)

The LEDs of the R&S TSMA-BP Battery Pack Unit are controlled by the R&S TSMA instrument. The R&S TSMA-BP Battery Pack Unit without connected R&S TSMA instrument does not display the charging status via the LEDs.

In order to check the charging status of the batteries without connected R&S TSMA, remove the batteries from the R&S TSMA-BP Battery Pack Unit and check the battery internal display.

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