

# R&S® TSMExxDC Ultracompact Downconverters Manual



4901104002

Version 05

**ROHDE & SCHWARZ**

Make ideas real



This manual applies to the following R&S®TSME downconverter models:

- R&S®TSME30DC (4901.1004.02)
- R&S®TSME44DC (4901.2600.02)

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Throughout this manual, products from Rohde & Schwarz are indicated without the ® symbol , e.g. R&S®TSME30DC is indicated as R&S TSME30DC.

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# 1 Safety information (multilingual)

This option or accessory is designed for a specific Rohde & Schwarz product. Multilingual safety information is delivered with the product. Follow the provided installation instructions.

Esta opción o este accesorio están diseñados para un producto Rohde & Schwarz concreto. El producto va acompañado de información de seguridad en varios idiomas. Siga las instrucciones de instalación puestas a disposición.

Diese Option oder dieses Zubehör ist für ein bestimmtes Rohde & Schwarz Produkt vorgesehen. Mit dem Produkt werden mehrsprachige Sicherheitsinformationen geliefert. Befolgen Sie die mitgelieferten Installationsanweisungen.

Cette option ou cet accessoire est conçu pour un produit Rohde & Schwarz spécifique. Des informations de sécurité multilingues sont fournies avec le produit. Suivez les instructions d'installation fournies.

Questa funzione opzionale o accessoria è progettata per un prodotto Rohde & Schwarz specifico. Con il prodotto sono fornite informazioni sulla sicurezza in formato multilingue. Seguire le istruzioni di installazione allegate.

Esta(e) opção ou acessório foi concebida(o) para um produto específico da Rohde & Schwarz. Serão fornecidas informações de segurança multilingues com o produto. Siga as instruções de instalação fornecidas.

Αυτή η προαιρετική επιλογή ή εξάρτημα έχει σχεδιαστεί για συγκεκριμένο προϊόν Rohde & Schwarz. Μαζί με το προϊόν παρέχονται πληροφορίες ασφαλείας σε πολλές γλώσσες. Ακολουθήστε τις παρεχόμενες οδηγίες εγκατάστασης.

Din l-għażla jew aċċessorju huma mfassla għal prodott Rohde & Schwarz speċifiku. L-informazzjoni multilingwi dwar is-sikurezza hija pprovduta mal-prodott. Segwi l-istruzzjonijiet ipprovduti għall-installazzjoni.

Deze optie of dit accessoire is ontwikkeld voor een specifiek product van Rohde & Schwarz. Het product wordt geleverd met veiligheidsinformatie in meerdere talen. Volg de meegeleverde installatie-instructies.

Denne mulighed eller tilbehørsdel er designet til et specifikt Rohde & Schwarz produkt. En flersproget sikkerhedsanvisning leveres sammen med produktet. Følg de medfølgende installationsanvisninger.

Detta tillval eller tillbehör är avsett för en särskild produkt från Rohde & Schwarz. Säkerhetsinformation på flera språk medföljer produkten. Följ de medföljande installationsanvisningarna.

Tämä vaihtoehto tai lisävaruste on suunniteltu tietyille Rohde & Schwarz -yrityksen tuotteelle. Tuotteen mukana on toimitettu monikieliset turvallisuusohjeet. Noudata annettuja asennusohjeita.

Dette alternativet eller ekstrautstyret er utformet for et spesifikt Rohde & Schwarz produkt. Flerspråklig sikkerhetsinformasjon leveres med produktet. Overhold installasjonsveiledningen som følger med.

See valik või lisaseade on mõeldud konkreetsele Rohde & Schwarz tootele. Tootele on kaasas mitmekeelne ohutusteave. Järgige kaasasolevaid paigaldusjuhiseid.

Šī opcija vai piederums ir izstrādāts īpaši Rohde & Schwarz produktam. Produktam pievienota drošības informācija vairākās valodās. Ievērojiet sniegtos uzstādīšanas norādījumus.

Ši parinktis ar priedas skirti konkrečiam Rohde & Schwarz gaminiui. Su gaminiu pateikiama saugos informacijos keliomis kalbomis. Laikykitės pateikiamų montavimo nurodymų.

Ārēšī auka- eða fylgibúnaður er hannaður fyrir tiltekna Rohde & Schwarz vöru. Öryggisupplýsingar á mörgum tungumálum fylgja með vörunni. Fylgið meðfylgjandi uppsetningarleiðbeiningum.

Tá an rogha nó an oiriúint seo ceaptha le haghaidh táirge Rohde & Schwarz sonrach. Cuirtear eolas sábháilteachta ilteangach ar fáil leis an táirge. Lean na treoracha suiteála a thugtar.

Эта опция или принадлежность предназначена для конкретного продукта Rohde & Schwarz. В комплект поставки продукта входят инструкции по технике безопасности на нескольких языках. Соблюдайте прилагаемые инструкции по установке.

Ця опція або приладдя призначені для конкретного виробу Rohde & Schwarz. Інструкції з техніки безпеки кількома мовами постачаються разом із виробом. Дотримуйтеся наданих інструкцій зі встановлення.

Ta opcja lub akcesorium jest przeznaczona do określonego produktu Rohde & Schwarz. Dostarczany produkt zawiera informacje w wielu językach dotyczące bezpieczeństwa. Należy postępować zgodnie z dostarczonymi instrukcjami instalacji.

Tato varianta nebo příslušenství je určeno pro konkrétní produkt Rohde & Schwarz. S produktem jsou dodávány vícejazyčné bezpečnostní informace. Řiďte se příloženými pokyny k instalaci.

Táto verzia alebo príslušenstvo je navrhnutá pre špecifický výrobok Rohde & Schwarz. S výrobkom sa dodávajú viacjazyčné bezpečnostné pokyny. Riadte sa dodanými pokynmi na inštaláciu.

Ta možnost ali dodatek je zasnovan za določeni izdelka podjetja Rohde & Schwarz. Izdelku so priložena varnostna navodila v več jezikih. Upoštevajte priložena navodila za namestitvev.

Ezt a beállítást vagy tartozékot egy adott Rohde & Schwarz termékhez tervezték. A termékhez többnyelvű biztonsági információkat mellékelünk. Kövesse a mellékelt szerelési utasításokat.

Тази опция или аксесоар са проектирани за специфичен продукт на Rohde & Schwarz. Многоезикова информация за безопасност се доставя с продукта. Следвайте предоставените инструкции за монтаж.

Ova opcija ili oprema namijenjena je za određeni proizvod tvrtke Rohde & Schwarz. Uz proizvod su dostavljene sigurnosne napomene na više jezika. Pratite isporučene upute za ugradnju.

Ova opcija ili pribor je dizajniran za određeni Rohde & Schwarz proizvod. Proizvodu su priložene sigurnosne informacije na više jezika. Slijedite priložena uputstva za instalaciju.

Ova opcija ili dodatni pribor je projektovan za određeni Rohde & Schwarz proizvod. Bezbednosne informacije na više jezika se isporučuju uz proizvod. Sledite dostavljena uputstva za instalaciju.

Această opțiune sau acest accesoriu a fost conceput pentru un produs specific Rohde & Schwarz. Informațiile multilingve privind siguranța sunt livrate împreună cu produsul. Urmați instrucțiunile de instalare furnizate.

Ky opsion ose aksesori është krijuar për një produkt specifik Rohde & Schwarz. Bashkë me produktin jepen edhe informacionet e sigurisë në shumë gjuhë. Ndiqni udhëzimet e dhëna të instalimit.

Оваа опција или додаток се наменети за одреден производ на Rohde & Schwarz. Со производот се испорачани повеќејазични безбедносни упатства. Следете ги дадените упатства за инсталација.

Bu opsiyon veya aksesuar, belirli bir Rohde & Schwarz ürünü için tasarlanmıştır. Çok dilli güvenlik uyarıları ürünle birlikte teslim edilir. Size sağlanan kurulum talimatlarına uyun.

Şu opsiya ya-da esbap Rohde & Schwarz anyk önüm için niyetlenilen. Dürli dil-däki howpsuzlyk barada maglumat önüm bilen bile üpjün edilyär. Üpjün edilen gurnama ugrukdymalaryny ýerine ýetiriň.

इस विकल्प या एक्सेसरी को एक विशेष Rohde & Schwarz उत्पाद के लिए डिज़ाइन किया गया है. उत्पाद के साथ बहुभाषी सुरक्षा जानकारी दी जाती है. प्रदान किए गए इंस्टालेशन अनुदेशों का पालन करें.

本选项或附件专门设计用于特定的 Rohde & Schwarz 产品。产品随附多种语言版本的安全资讯。谨遵文件中的安装说明。

本オプションアクセサリは、特定の Rohde & Schwarz 製品向けに設計されています。多言語で記載された安全情報が製品に付属します。付属のインストール手順に従ってください。

이 옵션 또는 액세서리는 특정 Rohde & Schwarz 제품용으로 설계되었습니다. 제품과 함께 다국어로 작성된 안전 정보가 제공됩니다. 함께 제공된 설치 지침을 따르십시오.

本選配或配件專門設計用於特定的 Rohde & Schwarz 產品。產品隨附多種語言版本的安全資訊。遵守文件中的安裝說明。

Tùy chọn hoặc phụ kiện này dành riêng cho một sản phẩm Rohde & Schwarz cụ thể. Thông tin an toàn đa ngôn ngữ được cung cấp kèm theo sản phẩm. Thực hiện theo hướng dẫn lắp đặt kèm theo.

ตัวเลือกหรืออุปกรณ์เสริมนี้ออกแบบมาสำหรับผลิตภัณฑ์ Rohde & Schwarz โดยเฉพาะ โดยจะมีการจัดส่งข้อมูลด้านความปลอดภัยหลายภาษามาให้พร้อมกับผลิตภัณฑ์ ปฏิบัติตามคำแนะนำในการติดตั้งที่ให้ไว้

Pilihan atau aksesori ini direka bentuk untuk produk Rohde & Schwarz yang tertentu. Maklumat keselamatan berbilang bahasa disertakan bersama produk. Ikut arahan pemasangan yang diberikan.

Opsi atau aksesori ini dirancang untuk produk Rohde & Schwarz tertentu. Informasi keamanan dalam beberapa bahasa juga disertakan bersama produk. Ikuti petunjuk pemasangan yang disediakan.

Esta opción o este accesorio están diseñados para un producto Rohde & Schwarz en concreto. El producto va acompañado de información de seguridad en varios idiomas. Siga las instrucciones de instalación proporcionadas con el producto.



Esta opção ou acessório foi desenvolvido para um produto Rohde & Schwarz específico. Informações de segurança em vários idiomas acompanham o produto. Siga as instruções de instalação disponibilizadas.

אפשרות זו או האביזר מיועדים למוצר ספציפי של Rohde & Schwarz. מידע רב-לשוני בנושא בטיחות מצורף למוצר. יש לפעול בהתאם להנחיות ההתקנה המצורפות.

تم تصميم هذا الخيار أو الملحق لمنتج معين من منتجات Rohde & Schwarz. يتم تزويد معلومات السلامة متعددة اللغات مع المنتج. اتبع تعليمات التركيب الموضحة.

این قابلیت یا وسیله جانبی منحصراً برای محصول به خصوص Rohde & Schwarz طراحی شده است. اطلاعات ایمنی چندزبانه همراه این دستگاه ارائه شده است. دستور العمل‌های نصب ارائه شده را دنبال کنید.

اس اختیار یا حصے کو مخصوص Rohde & Schwarz پروڈکٹ کے لئے تیار کیا گیا ہے۔ پروڈکٹ کے ساتھ کثیر السانی زبانوں میں تحفظ کی معلومات فراہم کی جاتی ہیں۔ فراہم کردہ تنصیب کی ہدایات پر عمل کریں۔

## 2 About the R&S TSMExxDC

### Intended use

The R&S TSMExxDC instruments are intended to upgrade the R&S TSMx6 scanners to measure 5G NR signals in the mmWave frequency range. The down-converters extend the latest generation mobile network scanner family and provide all features for drive and walk testing.

Observe the operating conditions and performance limits stated in the data sheet.

### Safety information in the documentation

Safety information warns you of potential dangers and gives instructions on how to prevent personal injury or damage caused by dangerous situations. Throughout the documentation, safety instructions are provided when you need to take care during setup or operation.

The documentation helps you use the R&S TSMExxDC safely and efficiently. Keep the documentation nearby and offer it to other users.

### Related manuals

This manual describes the installation of the R&S TSMExxDC. For information on all other topics, refer to the following manuals:

- User manual of the R&S TSMA6
- User manual of the R&S TSMA6B
- User manual of the R&S TSME6

The R&S TSMA6/6B user manual and the R&S TSME6 user manual include basic setups and typical measurement examples.

### Key features

- Ultra broadband RF frequency range for down conversion (24 – 44 GHz)
  - R&S TSME30DC with a frequency range from 24 GHz to 30 GHz
  - R&S TSME44DC with a frequency range from 24 GHz to 44 GHz
- Fully controlled by R&S TSMx6 mobile network scanners to simplify operation and maximize the performance
- Customized mechanical concept with full compatibility to the latest R&S TSMx6 network scanner generation

- Future-proof concept (supports up to five scanners)
- Low power consumption

## 3 Preparing for use

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

### 3.1 Unpacking and checking

1. Unpack the product carefully.
2. Retain the original packing material. Use it when transporting or shipping the product later.
3. Using the delivery notes, check the equipment for completeness.
4. Check the equipment for damage.

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

### 3.2 Accessory list

The instrument comes with the following accessories:

- Printed Getting Started manual
- 12 V DC power supply cable (cigarette lighter cable)
- TSME Y-power cable
- TSME6 control cable
- Torque wrench (SMA 90 Ncm)
- Mounting wrench (SMA)
- 4 x Termination, 50  $\Omega$
- 5 x RF cables (3 different lengths)

**NOTE:** To realize an optimized cabling (flexible and as short as possible) for up to 5 R&S TSME6 devices, cables with different lengths are required. For each cable length, a specific attenuation must be considered.

Attenuation measured at IF frequency

- Short length cable: approx. 0.3 dB

- Medium length cable: approx. 0.4 dB
- Long length cable: approx. 0.7 dB

The attenuation must be taken into account in the transducer file (ROMES, ViCom).

- 4 x connecting screws

### 3.3 Connecting to power

This section describes how to connect the R&S TSMExxDC to a power supply unit.

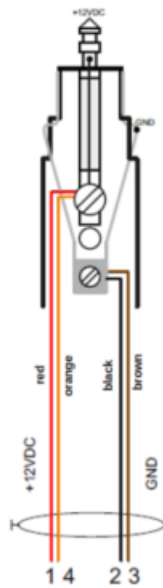
#### 3.3.1 Connecting to a vehicle DC power supply via cigarette lighter

The R&S TSMExxDC is delivered with a 12 V DC power supply cable with a cigarette lighter connector.

1. Check the rating of the vehicle DC power supply.
2. Connect the 4-pin connector to DC IN.
3. Connect the cigarette lighter adapter to the 12 V outlet of the vehicle.

#### 3.3.2 Connecting to the vehicle power supply via terminal

1. Demount the cigarette lighter adapter from the cable.
2. Connect the open ends of the cable to the DC supply. Ensure that the polarity is correct (see [Figure 3-1](#)).



**Figure 3-1: Supplied power cable with cigarette lighter adapter**

+12 V DC = red/orange cabling  
GND = black/brown cabling

### 3.3.3 Connecting to an AC power supply


If you operate the product with an external power supply, you can use it indoors only in pollution degree 2 environments where nonconductive contamination can occur. Suitable AC power supplies are listed in the data sheet. They differ in the output power:

- R&S TSMA6-Z1 has an output power of 105 W and is suitable for multiple R&S TSMx products.
1. Ensure that the required ratings listed in the data sheet are matched.
  2. Connect the round connector to DC IN.
  3. Insert the AC power plug into a power outlet with ground contact.

## 3.4 Connecting to RF In

### To connect RF cable (SMA connector)

- ▶ Connect the RF cable with SMA plug to the RF In ( $\leq 6$  GHz, bypass). See [Figure 4-2](#) and [Figure 4-3](#).

 The SMA connector is sensitive to mechanical stress. Use the following handling precautions.


- Always use a torque wrench and mount the cable end with 60 Ncm to 90 Ncm.
- Do not stack adapters directly at the SMA connector. If you need to use adapters, then always use a specific adapter cable (order no. 4900.1700.00).

### To connect RF cable (K connector)

- ▶ **NOTICE!** Using cables with SMA plugs may damage the K connector (bad RF transition from plug to connector).


Connect the RF cable with K plug to the following RF in connectors.

- Use only cables with K plugs for the connection to the K connector.
  - Use the port saver (R&S TDC292JACK, order no. 3637.8397.02) for the K connector.
- a) R&S TSME30DC (see [Figure 4-2](#))
    - RF In 24 GHz to 27.5 GHz
    - RF In 27 GHz to 30 GHz
  - b) R&S TSME44DC (see [Figure 4-3](#))
    - RF In 24 GHz to 44 GHz

 The K connector is sensitive to mechanical stress. Use the following handling precautions.

- Always use a torque wrench and mount the cable end with 90 Ncm.

## 3.5 Connecting to IF 1-5

 The SMA connector is sensitive to mechanical stress. Use the following handling precautions.

- Always use a torque wrench and mount the cable end with 60 Ncm to 90 Ncm.
- Do not stack adapters directly at the SMA connector. If you need to use adapters, then always use a specific adapter cable (order no. 4900.1700.00).

### To connect IF 1 (SMA connector)

- ▶ Connect the IF 1 to the master R&S TSMx6.

### To connect IF 2 to IF 5 (SMA connector)

1. Connect the IF 2 to IF 5 to additional R&S TSMx6 devices.  
For level-accurate measurements, the supplied 50  $\Omega$  terminations must be screwed onto the unused IF outputs.
2. To synchronize the master device and the additional devices, connect these devices via the AUX connectors. See [Chapter 6, "Measurement setup"](#), on page 26.



## 4 Instrument tour

### 4.1 Front panel view

The front panel of the R&S TSMExxDC does not provide any connectors or control elements for operation.

Behind the right side of the front panel (with the ventilation openings), 4 status LEDs are located.



These LEDs display the following states:

LEDs	State
On	R&S TSMExxDC ready for operation, RF-PLLs initialized correctly
Off	R&S TSMExxDC is off or RF-PLLs initialized not correctly
Blinking	Device identification command is sent by the software

**i** If the fan is off (temperature on the controller board < 48° C), the LEDs are partially covered by the fan blades.

### 4.2 Side panel view

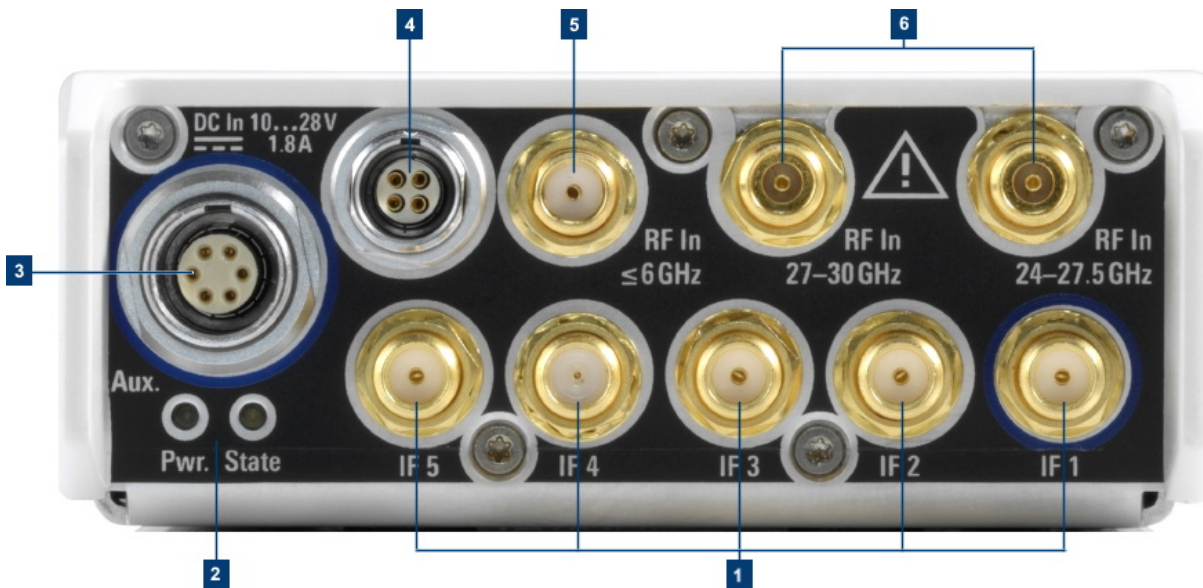
The R&S TSMExxDC provides a connector for a Kensington lock, which can be used to secure a mobile device against theft. The connector is located on the side panel of the instrument.



*Figure 4-1: Connector for a Kensington lock on the R&S TSMExxDC*

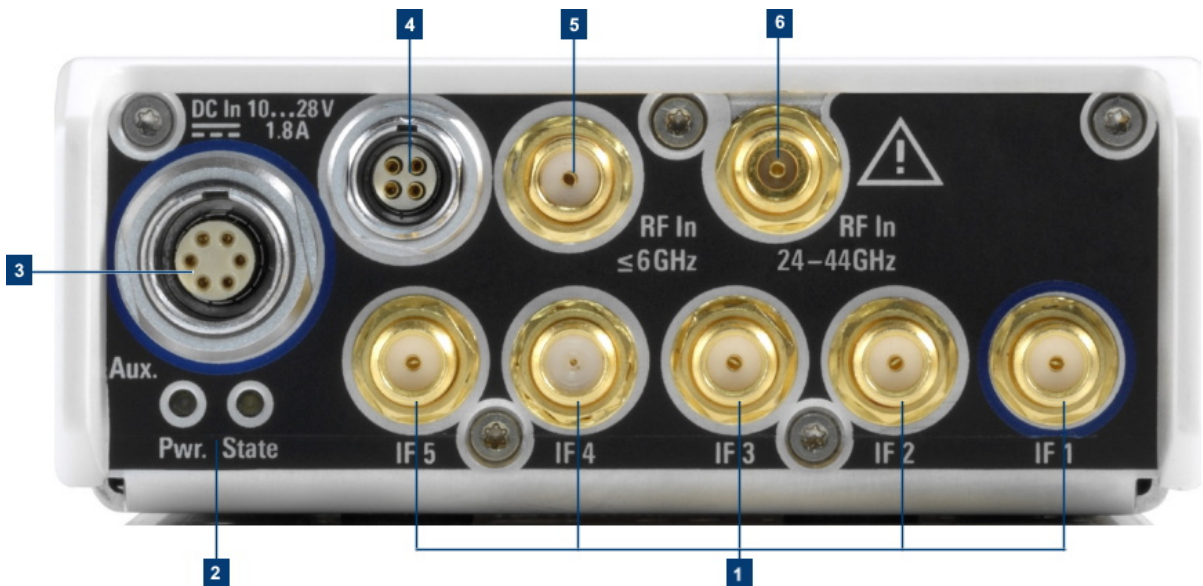
### 4.3 Rear panel view

This figure shows the rear panel view of the R&S TSMExxDC. The individual elements are described in more detail in the subsequent sections.



**Figure 4-2: R&S TSME30DC rear panel**

- 1 = "IF 1-5 (5x)" on page 20
- 2 = "Pwr./State LEDs" on page 20
- 3 = "AUX connector" on page 20
- 4 = "DC In connector" on page 21
- 5 = "RF In  $\leq 6$  GHz (SMA connector)" on page 21
- 6 = "RF In (2x), R&S TSME30DC (K connector)" on page 21



**Figure 4-3: R&S TSME44DC rear panel**

- 1 = "IF 1-5 (5x)" on page 20
- 2 = "Pwr./State LEDs" on page 20
- 3 = "AUX connector" on page 20

4 = "DC In connector" on page 21

5 = "RF In ≤ 6 GHz (SMA connector)" on page 21

6 = "RF In (1x), R&S TSME44DC (K connector)" on page 21

## IF 1-5 (5x)

The IF 1 connector (blue frame) is the only IF output, which supports measurements below 6 GHz. The IF1 is always connected to the master R&S TSMx6.

The connectors IF 2 to IF 5 are connected to additional devices. The synchronization of the master device and the additional devices is done via the AUX connector.

For details, see [Chapter 3.5, "Connecting to IF 1-5"](#), on page 16.

## Pwr./State LEDs

**Table 4-1: Pwr. and State LED states and their meaning**

STATE LED	POWER LED	Meaning
Off	Off	No power supply connected at DC IN Power supply off Power supply < 10 V
Off	Yellow	Standby
Off	Green, blinking (2 Hz)	FGPA configuration in progress
Off	Green	R&S TSMExxDC ready, not connected
Green, blinking rapidly	Green	Connected or measuring
Green, blinking 2 Hz	Green	Instrument is identified by the software
Red, blinking 2 Hz	Green	Temperature warning (controller board temperature = 65° C to 70° C)
Red (continuous)	Green	Temperature error (controller board temperature above 70° C)

\*The fans are temperature-controlled and below a temperature of 48° C on the controller board, the fans are in status OFF.

## AUX connector

The AUX connector (blue frame) is used to connect the master R&S TSMx6.

**DC In connector**

The DC IN connector is required for the DC power supply (10-28 V, max. 1.8 A). For details, see [Chapter 3.3, "Connecting to power"](#), on page 13.

**RF In ≤ 6 GHz (SMA connector)**

The frequency range RF bypass input (SMA connector) supports measurements below 6 GHz. For details, see ["To connect RF cable \(SMA connector\)"](#) on page 15.

**RF In (2x), R&S TSME30DC (K connector)**

The frequency range downconverter inputs 1 and 2 (K connector) support different input frequency ranges (mm waves).

- 24 GHz to 27.5 GHz
- 27 GHz to 30 GHz

For details, see ["To connect RF cable \(K connector\)"](#) on page 15.

**RF In (1x), R&S TSME44DC (K connector)**

The frequency range downconverter input (K connector) supports the input frequency range from 24 GHz to 44 GHz (mm waves).

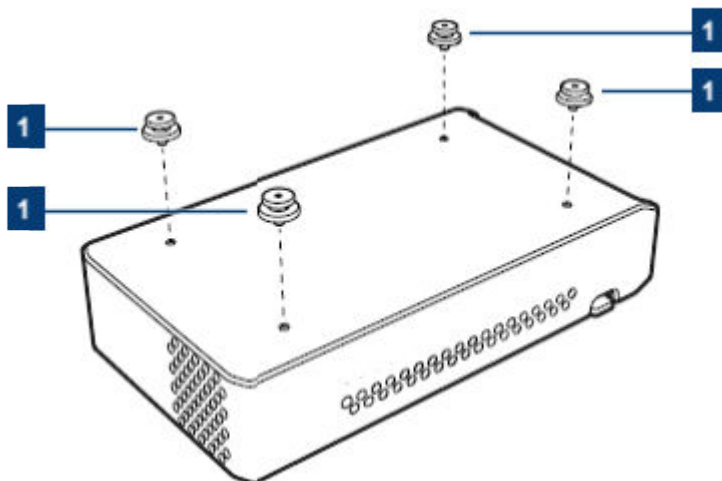
For details, see ["To connect RF cable \(K connector\)"](#) on page 15.

## 5 Vibration-proofed stacking

### 5.1 Cascading R&S TSMA6/6B and R&S TSME6

#### To connect R&S TSMA6/6B and R&S TSME6

1. Screw the connecting elements (order no. 4900.0804.00) on the top of the R&S TSMA6/6B.
  - Torque:  $0.66 \text{ Nm} \pm 0.05 \text{ Nm}$
  - Secure with liquid plastic

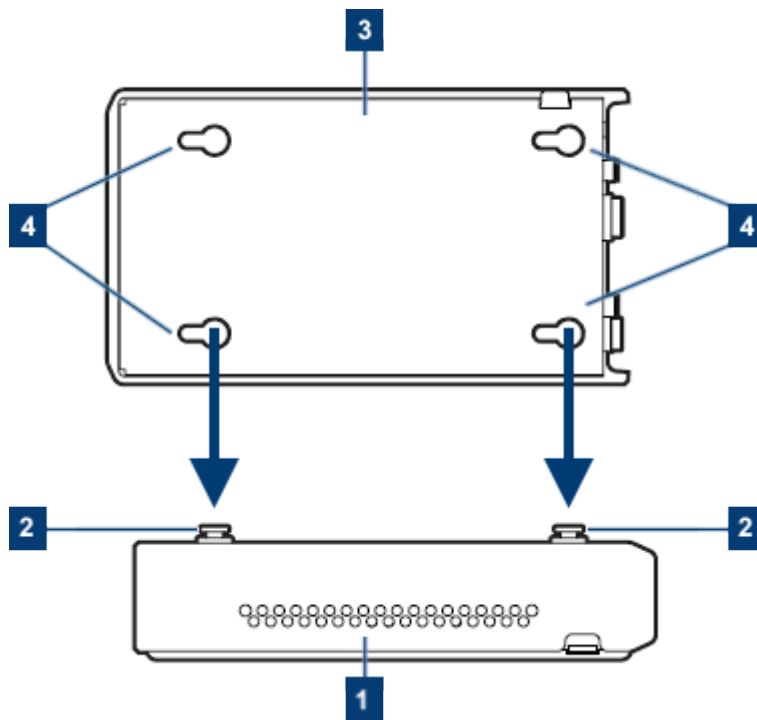


**Figure 5-1: Connecting elements**

1 = Connecting elements (order no.4900.0804.00)

2. **NOTICE!** An insufficient airflow can cause the instrument to overheat, which disturbs the operation and even cause damage. Make sure that all fan openings are unobstructed and that the airflow perforations are unimpeded, particularly when you install the instrument in a rack or packed in a backpack. Ensure that the following surrounding spaces to the instrument are kept clear:
  - Front pane: minimum 2 cm
  - Left/right panes: minimum 1 cmAlign the connecting elements with the holes on the bottom of an R&S TSME6 and press the R&S TSME6 down.

Connecting R&S TSMA6/6B-BP with R&S TSME6 and R&S TSMExxDC/TSMS53DC



**Figure 5-2: Aligning R&S TSMA6/6B and R&S TSME6**

- 1 = R&S TSMA6/6B
- 2 = Connecting screws
- 3 = R&S TSME6
- 4 = Holes on the bottom pane of R&S TSME6

## 5.2 Connecting R&S TSMA6/6B-BP with R&S TSME6 and R&S TSMExxDC/TSMS53DC

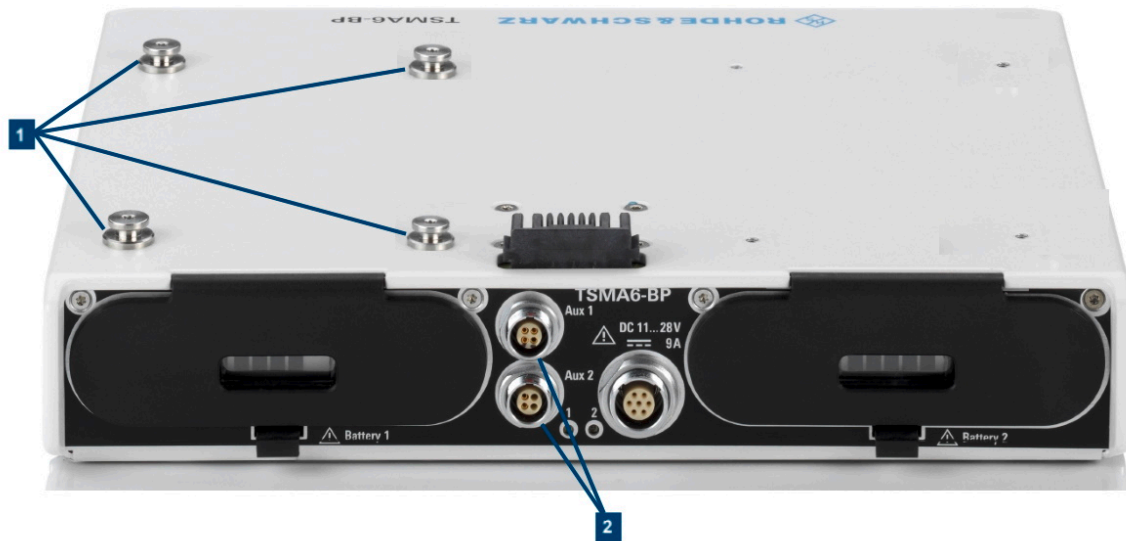
**i** The following steps are valid for R&S TSME6 and downconverter R&S TSMExxDC/R&S TSMS53DC.

For the cabling of the devices, the accessory cables R&S TSMA6-BPPT or R&S TSMA6-BP2T are necessary.

1. Screw the collar screws (1) on the top of the R&S TSMA6/6B-BP with a Torx 8 screw driver.
  - Torque: 0.66 Nm ± 0.05 Nm

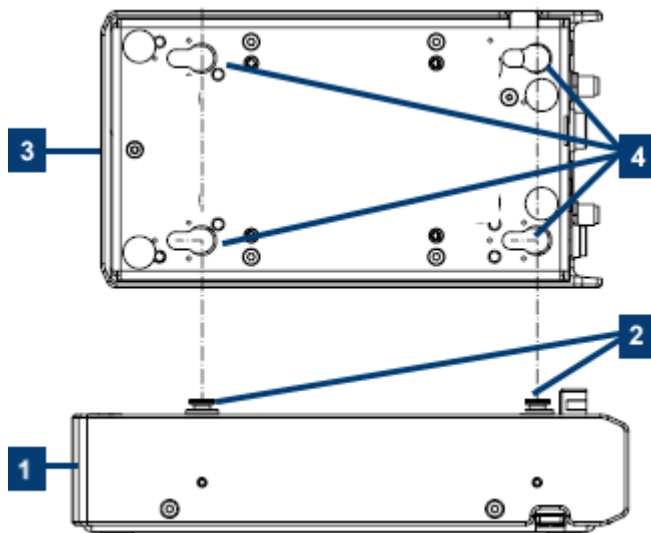


Connecting R&S TSMA6/6B-BP with R&S TSME6 and R&S TSMExxDC/TSMS53DC



- 1 = Collar screws for connecting R&S TSME6
- 2 = Aux 1 / Aux 2 (auxiliary power out for connecting R&S TSME6/TSMExxDC/TSMS53DC via power cable R&S TSME-ZYC)

2. Align the collar screws with the snap-in holes on the bottom of an R&S TSME6/TSMExxDC/TSMS53DC and press the device down.



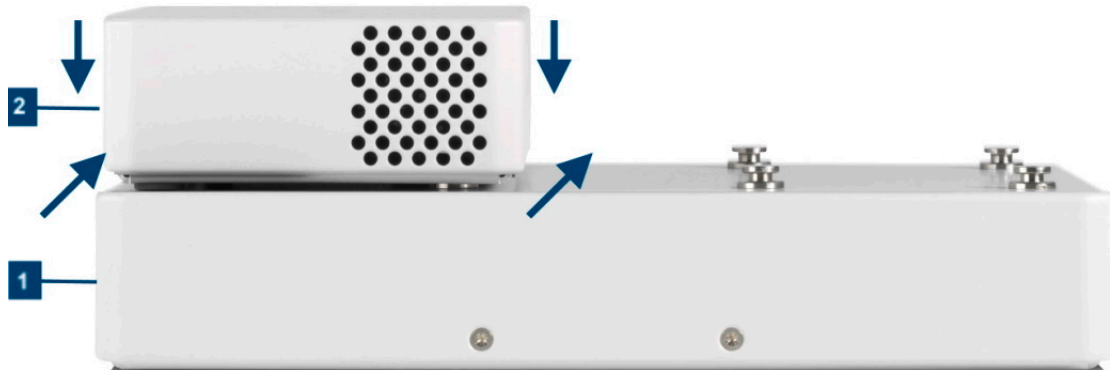
**Figure 5-3: Example: Aligning R&S TSMA6/6B-BP and R&S TSME6**

- 1 = R&S TSMA6/6B-BP
- 2 = Collar screws
- 3 = R&S TSME6/TSMExxDC/TSMS53DC
- 4 = Snap-in holes on the bottom pane of R&S TSME6/TSMExxDC/TSMS53DC



Connecting R&S TSMA6/6B-BP with R&S TSME6 and R&S TSMExxDC/TSMS53DC

3. Move the R&S TSME6/TSMExxDC/TSMS53DC to the back side, until you hear a click when the collar screws are locked in.



**Figure 5-4: Connected R&S TSME6/TSMExxDC/TSMS53DC and R&S TSMA6/6B-BP**

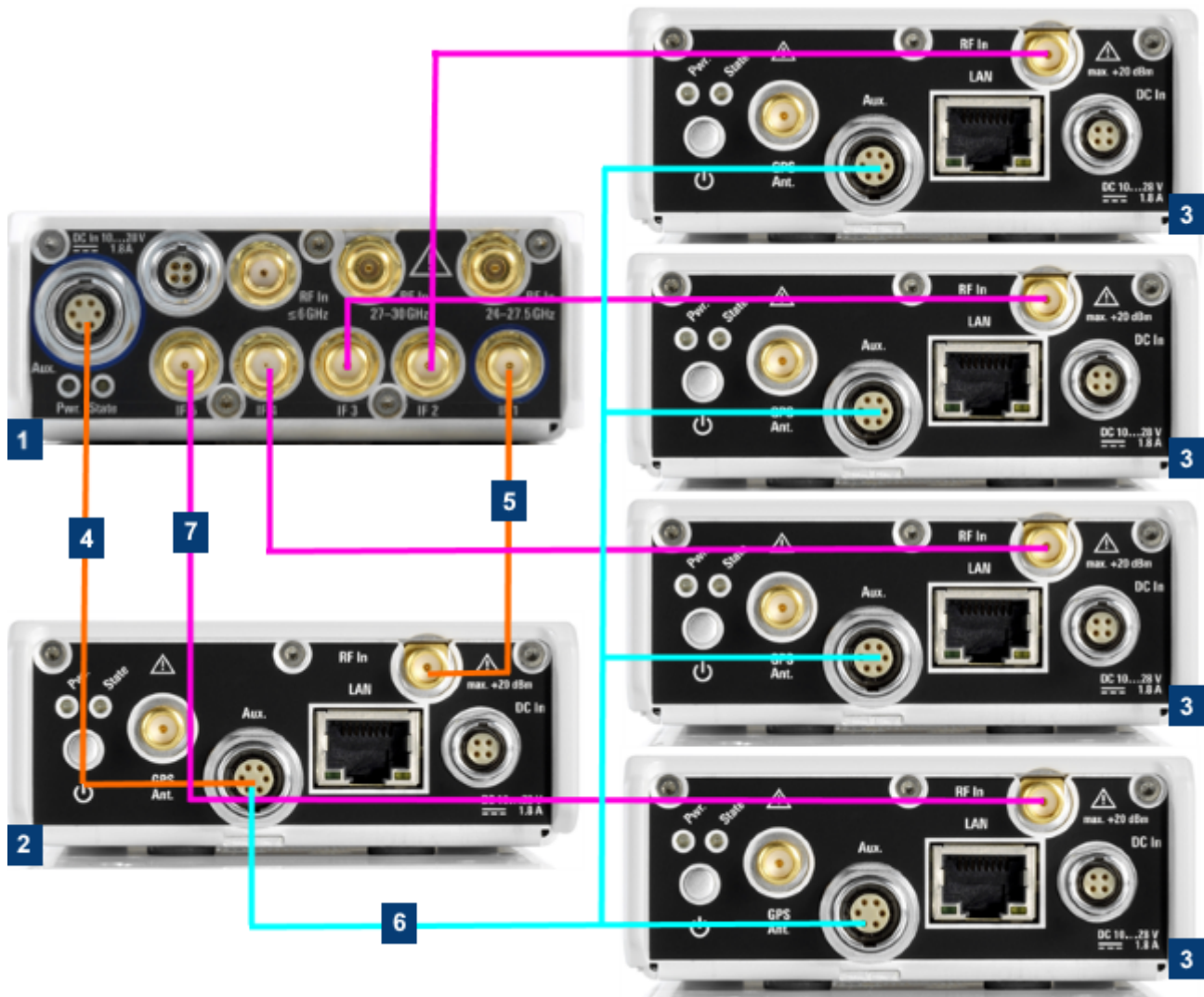
1 = R&S TSMA6/6B-BP

2 = R&S TSME6/TSMExxDC/TSMS53DC

4. Connect the power cable R&S TSMA6-BPPT resp. R&S TSMA6-BP2T from AUX1 resp. AUX2 to DC IN of R&S TSME6/xxDC/TSMS53DC.

## 6 Measurement setup

Figure 6-1 shows a measurement setup with one R&S TSME30DC and five R&S TSME6 devices.




**Figure 6-1: Example measurement setup with 5 R&S TSME6 devices**

- 1 = R&S TSME30DC
- 2 = Master R&S TSME6
- 3 = R&S TSME6 2 to 5
- 4 = Synchronization R&S TSME30DC - Master R&S TSME6\*
- 5 = R&S TSME30DC IF 1 - Master R&S TSME6 RF In
- 6 = Synchronization Master R& TSME6 - R&S TSME6 2 to 5\*
- 7 = R&S TSME30DC IF 2 to 5 - R&S TSME6 RF In 2 to 5


\*The cable to synchronize R&S TSME30DC and the master R&S TSME6 exists as separate cable and as essential part of the cable bundle to synchronize to master R&S TSME6 with the additional R&S TSME6 devices.

The R&S TSMExxDC supports up to 5 scanners.

 Only R&S TSME6 and R&S TSMA6/6B devices are supported.

IF 1 is the only IF output supporting the bypass (frequencies < 6 GHz). The IF 1 must be connected always with the master R&S TSMx6. IF 2 to 5 are only used to enhance the measurement bandwidth and cannot operate independent from IF 1.

To synchronize the R&S TSMExxDC with the master R&S TSME6, the AUX connectors of the devices are connected via an AUX cable. If more than one R&S TSME6 is used, the synchronization is done between the master R&S TSME6 and the additional R&S TSME6 devices and between the master R&S TSME6 and the R&S TSMExxDC. Therefore a specific cable is required.

 The AUX connector and the IF 1 connector of the R&S TSMExxDC are marked with a blue circle. Both connectors must be connected with the master R&S TSME6.

The use of the black sync cable is not supported as it does not provide control to the downconverter.

The configuration of the R&S TSMExxDC is done via the connected R&S TSME6 / R&S TSMA6 with the "TsmeDeviceManager" software.

### **Configuring R&S TSMExxDC - "Downconverter Configuration"**

In this tab, you can configure the IF output receiver and the RF input antenna of the R&S TSMExxDC.

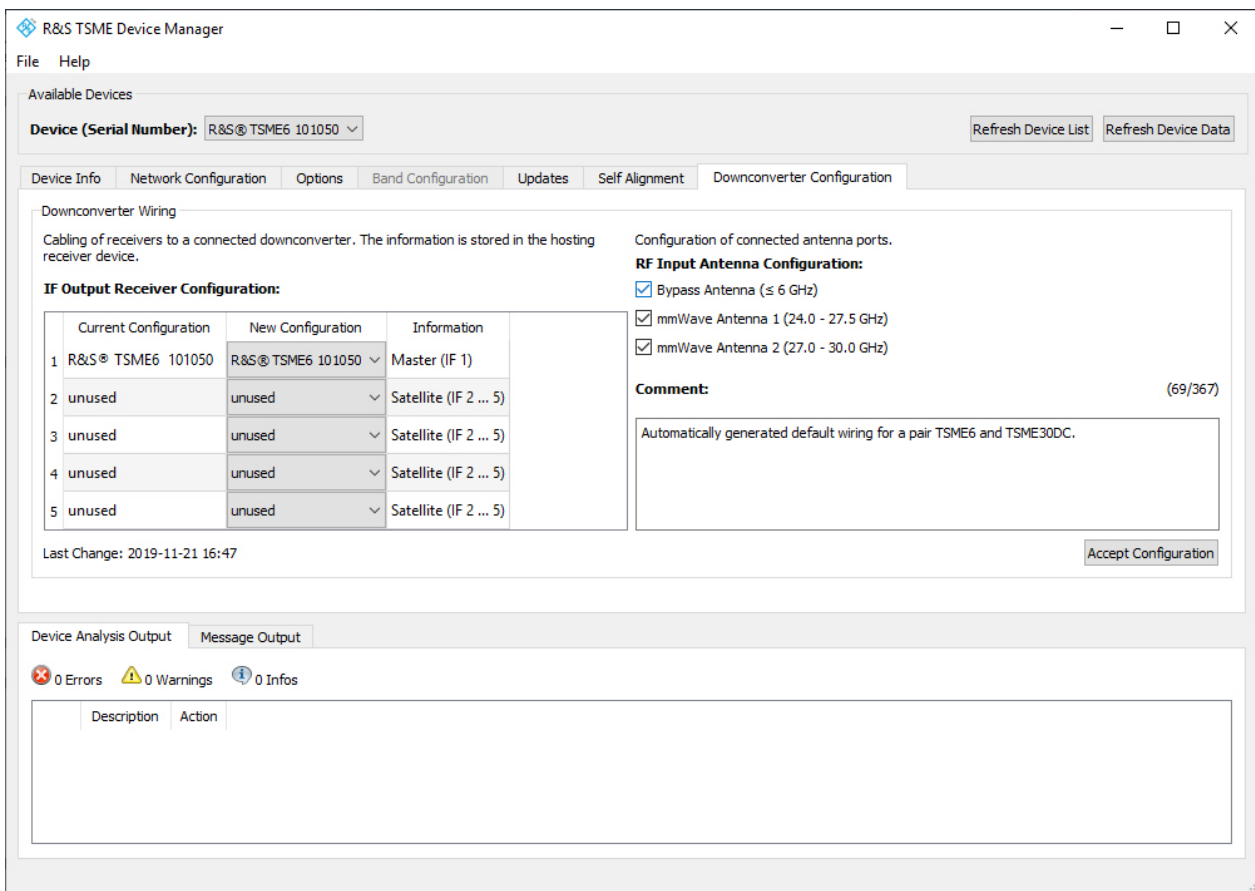


Figure 6-2: Tab "Downconverter Configuration" (Example: R&S TSME30DC)

- IF Output Receiver Configuration**  
 Specify the configuration of the IF output connectors of the R&S TSMExxDC.
- RF Input Antenna Configuration (R&S TSME30DC)**  
 Specify the configuration of the RF input antenna connectors of the R&S TSMExxDC.
  - Bypass Antenna ( $< 6$  GHz)
  - mmWave Antenna 1 (24 GHz to 27.5 GHz)
  - mmWave Antenna 2 (27 GHz to 30 GHz)
 For R&S ViCom and R&S ROMES, the API allows only the configuration of frequencies of activated antenna ports. For the overlapping frequency range 27 GHz to 27.5 GHz, the "mmWave Antenna 1" is used by default.
- RF Input Antenna Configuration (R&S TSME44DC)**  
 Specify the configuration of the RF input antenna connectors of the R&S TSMExxDC.
  - Bypass Antenna ( $< 6$  GHz)

- mmWave Antenna 1 (24 GHz to 44 GHz)

For R&S ViCom and R&S ROMES, the API allows only the configuration of frequencies of activated antenna ports.

- **Accept Configuration**

To confirm the current configuration settings, select the "Accept Configuration" button.

After the configuration has finished, close the "TsmeDeviceManager".

For details about the "TsmeDeviceManager", refer to the user manual of R&S TSMA6 or R&S TSME6.

## 7 Korea certification class B



이 기기는 가정용(B급) 전자파 적합기기로서 주로 가정에서 사용하는 것을 목적으로 하며, 모든 지역에서 사용할 수 있습니다.

## 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](http://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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