

R&S[®]TS-PAD4, R&S[®]TS-PAD5 Mass Interconnect Receiver for the R&S[®]TSVP family User Manual



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Version 02

ROHDE & SCHWARZ
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This document describes the following models:

- R&S®TS-PAD4 (VPC G20) RCV (3697.9877.02)
- R&S®TS-PAD4 (VPC G20) RCV+PLATFORM (3697.9877.03)
- R&S®TS-PAD5 (VPC G20X) RCV (3697.9919.02)
- R&S®TS-PAD5 (VPC G20X) RCV+PLATFORM (3697.9919.03)

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Mühlhofstr. 15, 81671 München, Germany

Phone: +49 89 41 29 - 0

Fax: +49 89 41 29 12 164

Email: info@rohde-schwarz.com

Internet: www.rohde-schwarz.com

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5046.4023.02 | Version 02 | R&S®TS-PAD4, R&S®TS-PAD5

Throughout this manual, products from Rohde & Schwarz are indicated without the ® symbol , e.g. R&S®TS-PAD4 is indicated as R&S TS-PAD4.

Contents

1	Safety information (multilingual)	5
2	Documentation overview	9
2.1	Getting started manual.....	9
2.2	User manuals.....	9
2.3	System manual.....	10
2.4	Service manual.....	10
2.5	Printed safety instructions.....	10
2.6	Brochures and specifications.....	10
2.7	Release notes and open source acknowledgment.....	10
3	Welcome to the R&S TS-PAD4, R&S TS-PAD5	11
3.1	R&S TS-PAD4, R&S TS-PAD5 together with R&S TSVP specifications.....	13
4	Module tour	14
4.1	Interface description.....	16
4.1.1	Slot assignment R&S TS-PADx.....	17
4.1.2	Horizontal signal module assembly.....	18
4.1.3	Vertical signal module assembly.....	20
4.2	Mass interconnect receiver (RCV).....	21
4.3	Interchangeable test adapter (ITA).....	24
5	Installation	29
5.1	Thread types at the VPC interface.....	29
5.2	Installation of VPC interfaces.....	30
5.2.1	Placing the VPC interface at the R&S TSVP.....	30
5.2.2	R&S TSVP with platform and mounting rail.....	39
5.3	R&S PFPIDx (ITA) and R&S TS-PADx (RCV) engagement.....	41
6	Maintenance, storage and disposal	43
6.1	Storage.....	43
6.2	Disposal.....	43
7	Troubleshooting	44

7.1 Contacting customer support..... 44

Annex..... 45

A Ordering information..... 45

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 -yrietyksen 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. Tootega on kaasas mitmekeelne ohutusteave. Järgige kaasasolevaid paigaldusjuhiseid.

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

Šī parinktis ar priedas skirti konkrētam Rohde & Schwarz gaminiui. Su gaminiu pateikiama saugos informācijas keliomis kalbomis. Laikykitės pateikiamų montavimo nurodymų.

Þessi 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 določen izdelek podjetja Rohde & Schwarz. Izdelku so priložena varnostna navodila v več jezikih. Upoštevajte priložena navodila za namestitev.

Ezt a beállítást vagy tartozékot egy adott Rohde & Schwarz termékhez tervezték. A termékhez többnyelvű biztonsági információt 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 üçün niyetlenilen. Dürli dildäki 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。

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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.

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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. دستورالعمل‌های 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 Documentation overview

This section provides an overview of the R&S TSVP (test system versatile platform) user documentation.

All documents are delivered with the Generic Test Software Library ("R&S GTSL") installation package. After installing the software, you can open all the documentation from the Windows "Start" menu. Additionally, you can find detailed information about the software interfaces in the "R&S GTSL Help" folder in the Windows "Start" menu.

The user documentation and "R&S GTSL" installation package are also available for download in GLORIS at:

<https://gloris.rohde-schwarz.com/>

For details, see the R&S TSVP Getting Started manual.

2.1 Getting started manual

Introduces the R&S TSVP (test system versatile platform) and describes how to set up and start working with the product. It includes safety information.

A printed version is delivered with the instrument.

2.2 User manuals

Separate manuals are provided for the base units, the individual plug-in module types, as well as for the control software and the calibration tool:

- Base unit manual
The base unit user manuals introduce the base units and describes how to set up and operate the product. It includes safety information and information on maintenance and instrument interfaces. It includes the contents of the getting started manual.
- Plug-in module manuals
Contain the description of the specific modules. Basic information on setting up the R&S TSVP (test system versatile platform) is not included.
- In-System calibration user manuals
Provide all the information required for installation and operation of the in-system calibration R&S TS-ISC solution.
- Control software
 - R&S GTSL
Generic Test Software Library
 - R&S EGTSL
Enhanced Generic Test Software Library
 - R&S IC-Check

Generic Test Software Library

2.3 System manual

Describes the complete R&S TSVP (test system versatile platform) as a whole, including the combined use of R&S CompactTSVP and R&S PowerTSVP, plug-in modules and generic test software. It also includes typical use cases.

Additionally, it describes known installation problems (hardware and software) along with possible solutions.

2.4 Service manual

Describes the self-test to check correct operation, troubleshooting and fault elimination, and contains mechanical drawings and spare part lists.

2.5 Printed safety instructions

Provides safety information in many languages. The printed document is delivered with the product.

2.6 Brochures and specifications

Separate brochures are provided for the base unit, the individual plug-in module types, as well as for the control software. The brochures provide an overview of the base units and each additional module, and also contain the technical specifications. They also list the hardware options and their order numbers, and optional accessories.

2.7 Release notes and open source acknowledgment

The release notes list new features, improvements and known issues of the current software version. In addition, the available firmware versions and the firmware update procedure for plug-in modules are described.

The open-source acknowledgment document provides verbatim license texts of the used open source software.

3 Welcome to the R&S TS-PAD4, R&S TS-PAD5

Mass interconnect solutions in general act as the connector interface between test instrumentation like the R&S TSVP and devices/units under test (DUT/UUT) in test applications. Used in defense, aerospace, automotive, manufacturing, and other applications, mass interconnect systems are available in multiple sizes and configurations to accommodate virtually the hardware of any testing requirement.

Mass interconnect systems are flexible, reconfigurable and modular by design. Modular and scalable mass interconnect solutions like the R&S TS-PAD4 and R&S TS-PAD5 mass interconnect receiver ensure cost efficient highest signal quality and reliability.

More details about R&S TSVP family and the dedicated instruments and modules are described individually by the appropriate documents like the brochure, user manuals, system manuals and service manuals refer to [Chapter 2, "Documentation overview"](#), on page 9.

To accelerate integration of the R&S TSVP into production test environments in a quick and cost-effective manner, an entire set of mass-interconnection support products is available, which can be configured direct in front of the R&S TSVP chassis.

Overview of the available types of mass interconnect receiver

The following types of mass interconnect receiver are available:

- R&S TS-PAD4 variant 02 mass interconnect receiver (RCV) VPC G20
- R&S TS-PAD4 variant 03 mass interconnect receiver (RCV) VPC G20 + platform
- R&S TS-PAD5 variant 02 mass interconnect receiver (RCV) VPC G20x
- R&S TS-PAD5 variant 03 mass interconnect receiver (RCV) VPC G20x + platform
- R&S TS-PAD6 mass interconnect receiver (RCV) VPC G40x (not scope of this manual)

Key features:

- Direct mounting on R&S TSVP chassis
- Direct connection to R&S TSVP instrument front panel connectors without wiring
- Optimized system residuals because of direct connection, ATE signal residuals reduced to a minimum
- Unique "pull-through" design with signal modules and R&S TSVP instrument modules
- Available with extension area as R&S TS-PAD5 to bypass the R&S TSVP chassis with further signals by using the same interface
- Supporting table-top solutions by an optional platform in front of the mass interconnect receiver
- Free choice of the signal module quality (highly reliable industrial standard from VPC, cost efficient DIN 41612 or spring loaded precision contacts)

Benefits

- Quick changeover of R&S TSVP instruments thanks to proven VPC QuadraTrack engagement mechanism.
- Protects delicate instrument connectors and reduces costs
- Compact system size
- Less wiring with direct plug-in connection
- Reliable fixture connections for more than 20 000 mating cycles
- Long-term cooperation with Virginia Panel Corporation (VPC) to ensure worldwide system and spare part availability

Signal modules

Due to wear between the instruments DIN 41612 front module connectors of the R&S TSVP and the mass interconnect receiver, signal modules with different levels of quality are available, e.g. R&S PFPAX4, which is compatible with Virginia Panel Corporation (VPCs) QuadraPaddle signal modules on fixture side.

As a cost-efficient alternative, the R&S PFPAX3 signal module based on standard DIN 41612 connectors can also be used. Additionally spring-loaded precision signal module can be configured. Some of the R&S TSVP high-power instruments already use VPC Micro Power or TriPaddle signal modules. That means no additional signal modules are required together with such kind of modules because this functionality is already included on Rohde & Schwarz instrument level.

The modules can be mixed if each insertion slot is equipped with the same kind of signal module at the receiver and fixture side as well. With their wide range of standardized high-quality connectors, VPC solutions enable rapid and easy connection of the R&S TSVP to the fixture.

From wire-wrapping to pre-wired cable assemblies to innovative PCB adapter cards that allow the use of commercially available double-ended cables, VPC solutions enable rapid connection of instruments to devices under test.



Figure 3-1: R&S TS-PAD5 mass interconnect receiver VPC G20x with extension area and different signal modules in front of the R&S TSVP modular instrument chassis

3.1 R&S TS-PAD4, R&S TS-PAD5 together with R&S TSVP specifications

Observe the specifications of the listed documents in [Chapter 2, "Documentation overview"](#), on page 9.

If necessary, the respective specifications of third-party suppliers must also be observed.

General data	
Dimensions (W x H x D)	Base unit: 501 mm x 249 mm x 552 mm Base unit + platform: 501 mm x 249 mm x 855 mm
Rack-mount kit	standard BW2000 brackets
Weight	
Base unit	22 kg
With typical options	27 kg

4 Module tour

This chapter describes how to combine R&S TS-PAD4, R&S TS-PAD5 and R&S TSVP with test fixtures.

R&S TS-PAD4

Mass interconnect receiver (RCV) VPC G20 direct mounted in front of a R&S TSVP modular instrument chassis.

The R&S TS-PAD4 is equipped with different signal modules in [Figure 4-1](#) like:

- 1 x R&S TS-PAX9 signal module VPC 90 series VTAC HSD for high-speed signals
- 6 x R&S PFPAX4 signal module VPC 90 series QuadraPaddle 96 pos.
- 1 x R&S TS-PSM4 power switching module



Figure 4-1: R&S TS-PAD4 mass interconnect receiver equipped with signal transmission modules in front of R&S TSVP

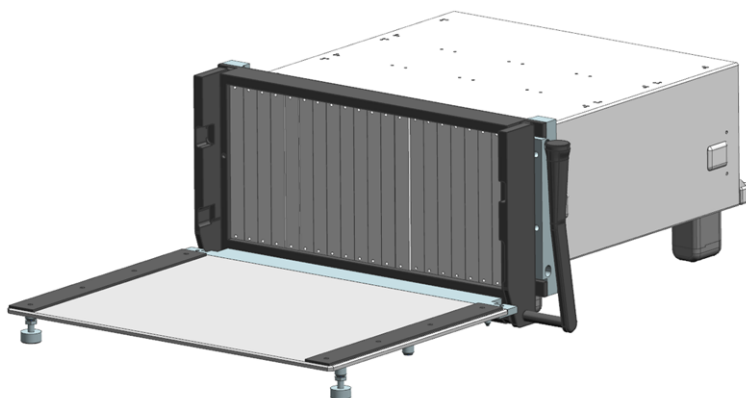


Figure 4-2: R&S TS-PAD4 mass interconnect receiver with a platform for a changeable fixture and R&S TSVP

R&S TS-PAD5

Mass interconnect receiver (RCV) VPC G20x direct mounted in front of a R&S TSVP modular instrument chassis. The R&S TS-PAD5 is equipped with a signal extension area which allows to bypass signals from the R&S TSVP by using the same interface. This approach is common used in the context of rack-integrated solutions.

The [Figure 4-3](#) illustrates the following sample configuration:

- R&S TS-PAD5 mass interconnect receiver VPC G20x direct mounted in front of the R&S TSVP
- 2 x R&S PFPAX3 signal module with DIN 41612 connector, 96 pos.
- 9 x R&S PFPAX4 signal module VPC 90 series QuadraPaddle 96 pos.
- 1 x R&S PFPAD-B1 signal module VPC 90 series TriPaddle/mini coax/vacuum 56/18/1 pos.
- 1 x R&S PFXA-B4 signal module VPC iCon 160 pos.

A variant of the TS-PAD5 is available which is equipped with a platform in front of the mass interconnect receiver, see [Figure 4-4](#). This enables table-top solutions where the fixture can easily be handled by placing it on the platform.



Figure 4-3: R&S TS-PAD5 mass interconnect receiver equipped with signal transmission modules and R&S TSVP



Figure 4-4: R&S TS-PAD5 mass interconnect receiver with a platform for a changeable fixture in front of R&S TSVP

4.1 Interface description

Schematic assembly overview for R&S TS-PADx

This chapter describes exemplarily the coaction of R&S TSVP using a VPC mass interconnect solution and the corresponding fixtures and adapters. The schematic view illustrated a typical use case and is intended use while creating new systems and fixtures.

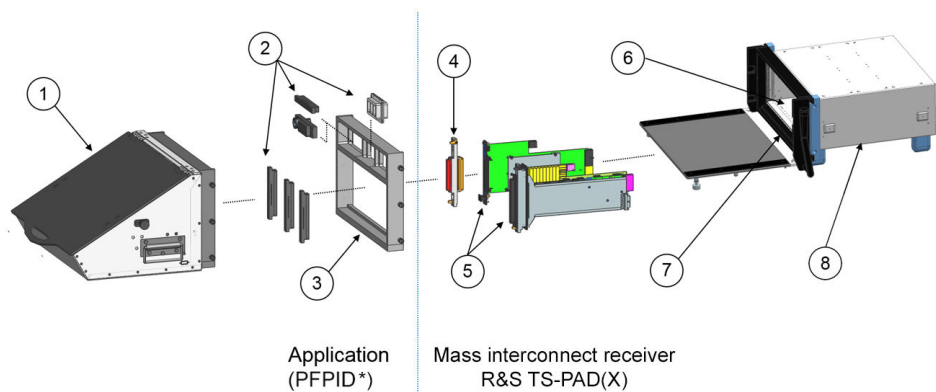


Figure 4-5: Schematic assembly overview

- 1 = Test fixture basic kit, has to be defined on the specific requirements for adopting UUTs/DUTs
- 2 = Signal modules (SIM) on side of the fixture
- 3 = Interchangeable test adapter (ITA), mounted at the fixture
- 4 = Signal module (SIM) on side of the mass interconnect receiver
- 5 = R&S TSVP modules
- 6 = R&S TSVP modules area
- 7 = R&S TS-PAD(x) mass interconnection receiver (RCV)
- 8 = R&S TSVP chassis

4.1.1 Slot assignment R&S TS-PADx

The [Table 4-1](#) illustrates the enumeration and the assignment at the different levels of installation.

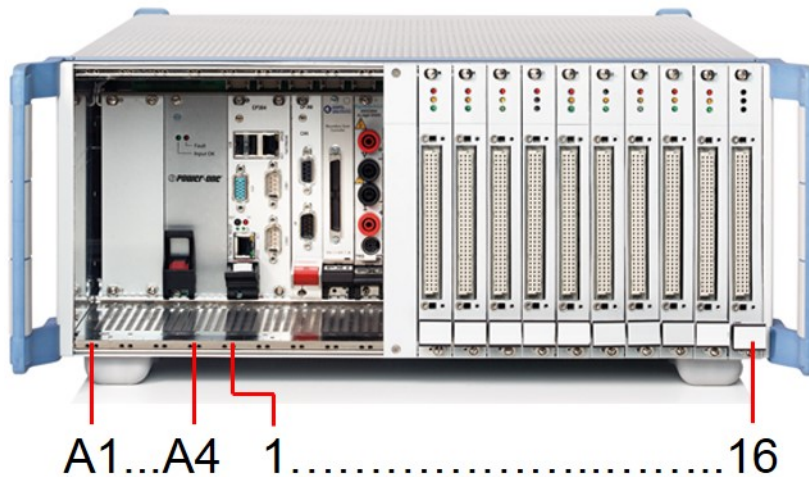


Figure 4-6: R&S TSVP front view and slot enumeration

Table 4-1: Enumeration and the assignment from slots of the R&S TSVP opposite the R&S TS-PADx

Slot enumeration R&S TS-PADx		Slot enumeration R&S TSVP, see Figure 4-6
Alias numbering for module assembly, see Chapter 4.1.2 , "Horizontal signal module assembly", on page 18 and Chapter 4.1.3 , "Vertical signal module assembly", on page 20	Numbering on top of the mass interconnect receiver	
S.A01	01	A1
S.A02	02	A2
S.A03	03	A3
S.A04	04	A4
S.01	05	1
S.02	06	2
S.03	07	3
S.04	08	4
S.05	09	5
S.06	10	6
S.07	11	7
S.08	12	8
S.09	13	9

Slot enumeration R&S TS-PADx		Slot enumeration R&S TSVP, see Figure 4-6
Alias numbering for module assembly, see Chapter 4.1.2, "Horizontal signal module assembly" , on page 18 and Chapter 4.1.3, "Vertical signal module assembly" , on page 20	Numbering on top of the mass interconnect receiver	
S.10	14	10
S.11	15	11
S.12	16	12
S.13	17	13
S.14	18	14
S.15	19	15
S.16	20	16

4.1.2 Horizontal signal module assembly

In the picture ([Figure 4-7](#)) you see the R&S TS-PAD5 for example. The R&S TS-PAD4 is a subset of the R&S TS-PAD5 without the extension upper tier positions (X.A, X.B, X.C).

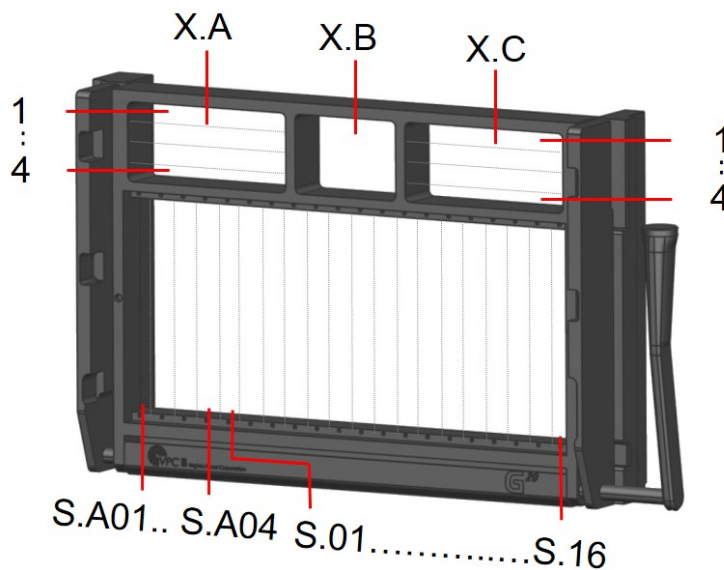


Figure 4-7: R&S TS-PAD4, R&S TS-PAD5 compatible with R&S TSVP (R&S TS-PAD4 is a subset of the R&S TS-PAD5 respective the slots S.A01 ... S.16)

Extension upper tier positions:

Column: X (left side: X.A, mid: X.B, right: X.C)

Row: 1 (top) to 4 (bottom)

R&S TSVP module bottom tier positions:

Column: S (left side: S.A01 to right side: S.16), see [Table 4-1](#)

Expression for localization of the items in general:

<System>.<Equipment>+location-connector.pin

Example:

```
PF5030.TS-PAD5+X.A-X1.5
|      |      |      +- pin
|      |      |      +---- connector
|      |      +----- location
|      +----- equipment
+----- system

TS-PAD5+S.01-X10.A1
|      |      +- pin
|      |      +---- connector
|      +----- location
+----- equipment
```

R&S PFPID5 interchangeable test adapter (ITA)

R&S PFPID4 is a subset of the R&S PFPID5 without the extension upper tier positions (X.A, X.B, X.C). For further information, see [Chapter 4.3, "Interchangeable test adapter \(ITA\)"](#), on page 24.

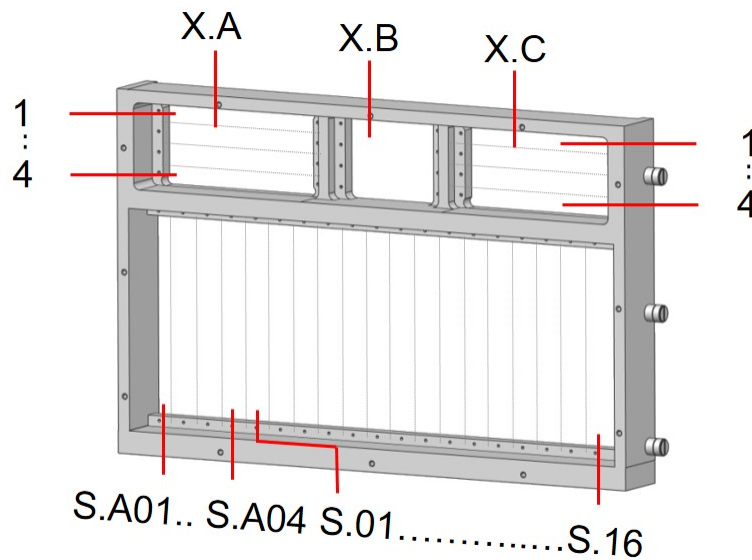


Figure 4-8: R&S PFPID5 interchangeable test adapter (ITA VPC G20X)

4.1.3 Vertical signal module assembly

Vertical signal module assembly is only possible in the extension upper tier positions (X.A, X.B, X.C). The extension upper tier positions are only available at the R&S TS-PAD5.

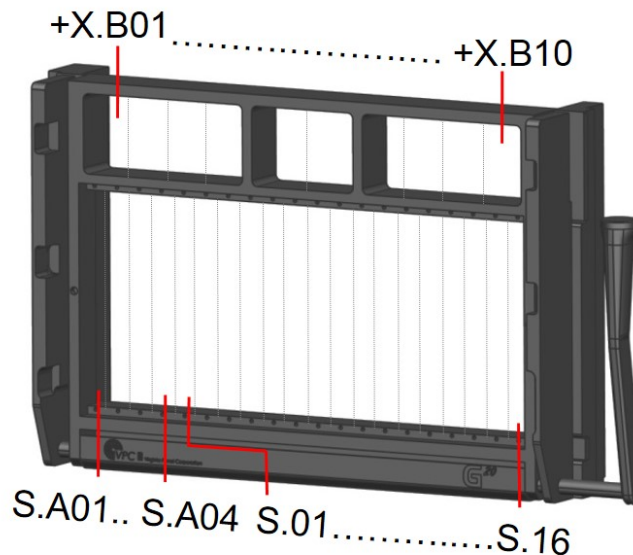


Figure 4-9: R&S TS-PAD5 mass interconnect receiver compatible with R&S TSVP

Extension upper tier positions:

Column: X.B (left side: X.B01 to right side: X.B10)

R&S TSVP module bottom tier positions:

Column: S (left side: S.A01 to right side: S.16), see [Table 4-1](#)

Expression for localization of the items in general:

<System>.<Equipment>+location-connector.pin

Example:

```
TS-PAD5+X.B05.A1
|           | |  +---- pin
|           | +----- connector
|           +----- location
+----- equipment
```

R&S PFPID5 interchangeable test adapter (ITA)

Vertical signal module assembly is only possible in the extension area. The extension area is only available at the R&S PFPID5. For further information, see [Chapter 4.3, "Interchangeable test adapter \(ITA\)"](#), on page 24.

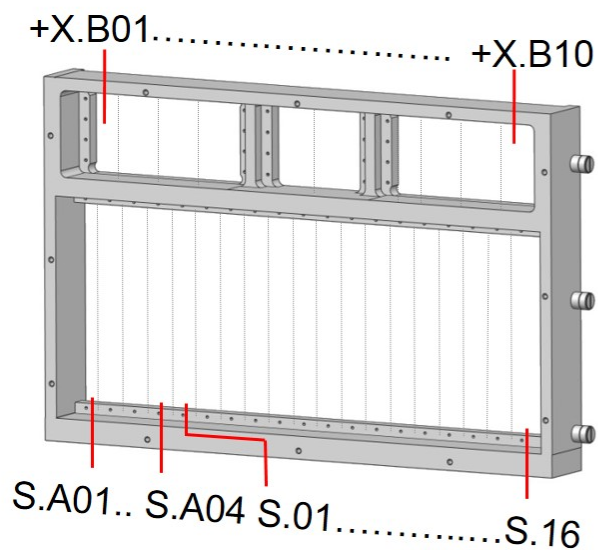


Figure 4-10: R&S PFPID5 interchangeable test adapter (ITA VPC G20X)

4.2 Mass interconnect receiver (RCV)

An overview of the available types of mass interconnect receiver is listed in ["Overview of the available types of mass interconnect receiver"](#) on page 11.

For ordering information, see [Chapter A, "Ordering information"](#), on page 45.

R&S TS-PAD5 RCV VPC G20x

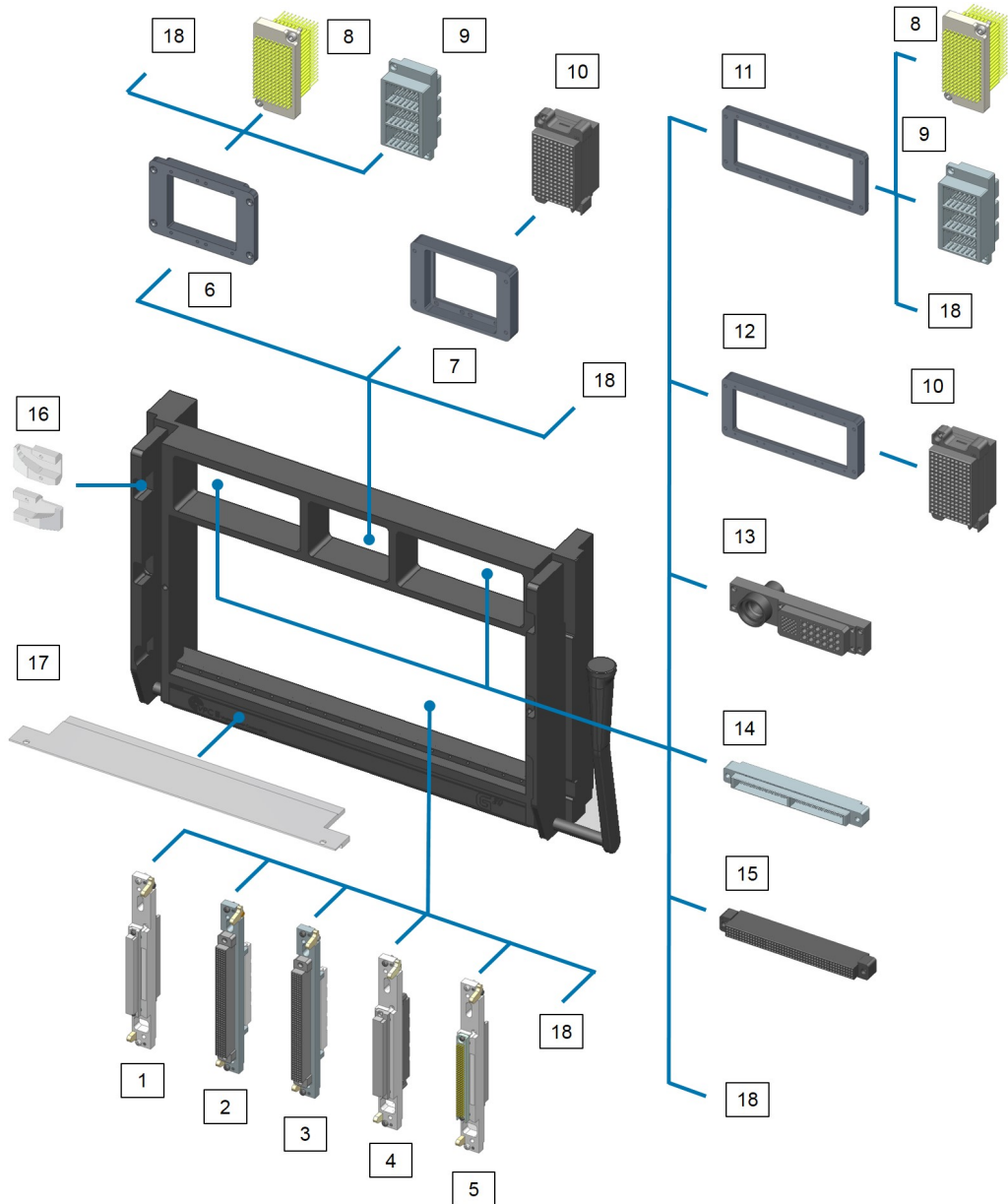


Figure 4-11: R&S TS-PAD5 mass interconnect receiver RCV VPC G20X, together with different signal modules and mounting accessories

The [Figure 4-11](#) is an example, not all available options are shown.

For explanation of the numbered items in [Figure 4-11](#), see [Table 4-2](#)

Table 4-2: R&S TS-PAD4, R&S TS-PAD5 accessory overview

Item	Type	Designation	Slot size
1	R&S PFPAX3	Signal module, DIN 41612, 96 pin for R&S TS-PAD4, R&S TS-PAD5 and R&S TS-PAD6	1
2	R&S PFPAX4	Signal module, VPC 90 series, VPC QuadraPaddle 192 position to DIN 41612, 96 pin for R&S TS-PAD4, R&S TS-PAD5 and R&S TS-PAD6	1
3	R&S PFPAX5	Signal module, VPC 90 series, VPC QuadraPaddle 192 position to DIN 41612, 128 pin for R&S TS-PAD4, R&S TS-PAD5 and R&S TS-PAD6	1
	R&S PFPAX9	Signal module VPC 90 series VTAC HSD, 34 insert, including patchcords 12" with 3 x USB3.0, 3 x RJ45 for R&S TS-PAD4, R&S TS-PAD5 and R&S TS-PAD6	
4	R&S PFPAX6	Signal module, DIN 41612, 128 pin for R&S TS-PAD4, R&S TS-PAD5 and R&S TS-PAD6	1
5	R&S PFPAX7	Signal module, spring contact, 96 pin for R&S TS-PAD4, R&S TS-PAD5 and R&S TS-PAD6	1
6	R&S PFPI-B2	Adapter plate Pylon, 2 insert for R&S TS-PAD5 and R&S TS-PAD6	2
7	R&S PFPI-B4	Adapter plate VPC iCon, 2 insert for R&S TS-PAD5 and R&S TS-PAD6	2
8	R&S TS-XPY	Signal module Pylon, 170 pin for R&S TS-PAD5 and R&S TS-PAD6	1
9	R&S PFXA-B2	Signal module VPC iCon VTAC HSD, 21 insert for R&S TS-PAD5 and R&S TS-PAD6	1
10	R&S PFXA-B4	Signal module, VPC iCon QuadraPaddle, 160 position for R&S TS-PAD5 and R&S TS-PAD6	1
	R&S PFXA-B5	Signal module VPC iCon TriPaddle 150 A, 4/4 position for R&S TS-PAD5 and R&S TS-PAD6	
11	R&S PFPI-B1	Adapter plate Pylon, 4 insert for R&S TS-PAD5 and R&S TS-PAD6	4
12	R&S PFPI-B3	Adapter plate VPC iCon, 4 insert for R&S TS-PAD5 and R&S TS-PAD6	4
13	R&S PFPAD-B1	Signal module VPC 90 series, 1 vacuum with filter, 56 VPC TriPaddle, 18 mini power or mini coaxial position for R&S TS-PAD5 and R&S TS-PAD6	2
14	R&S PFXA-B1	Signal module VPC 90 series VTAC HSD, 34 insert for R&S TS-PAD5 and R&S TS-PAD6	1
15	R&S PFXA-B3	Signal module, VPC 90 series VPC QuadraPaddle, 192 pin for R&S TS-PAD5 and R&S TS-PAD6	1
16	R&S PFPAD-BL R&S PFPAD-BR	VPC flush mount hanger, left/right for R&S TS-PAD4, R&S TS-PAD5 and R&S TS-PAD6. Only mounted by using R&S TS-PAD4, R&S TS-PAD5 and R&S TS-PAD6 without platform, example picture see Figure 5-20 .	
17	R&S PFPAD-BZ	Platform mounting rail, 20 slots for R&S TS-PAD4, R&S TS-PAD5 and R&S TS-PAD6	

R&S TS-PAD4 RCV VPC G20

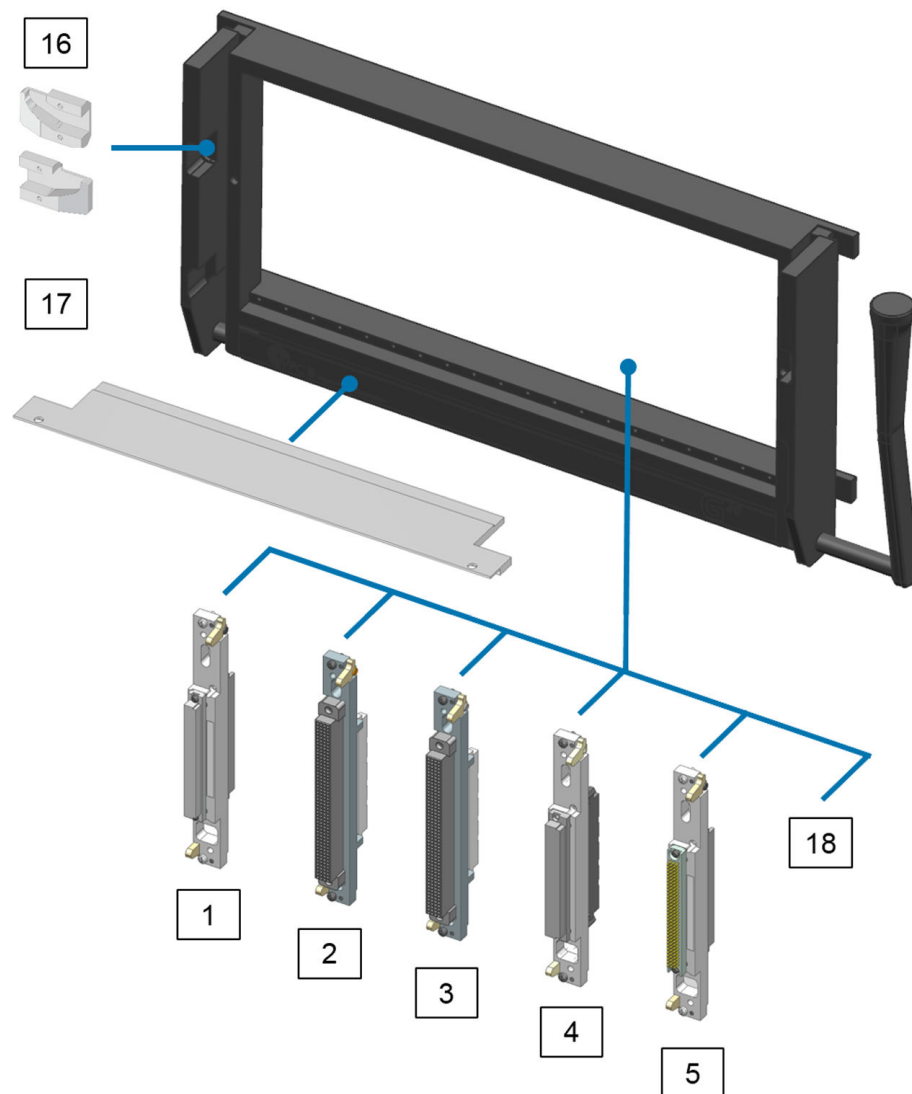


Figure 4-12: R&S TS-PAD4 mass interconnect receiver RCV VPC G20, together with different signal modules and mounting accessories

For explanation of the numbering in [Figure 4-12](#), see [Table 4-2](#)

4.3 Interchangeable test adapter (ITA)

To ensure fast, easy and reliable engaging the fixture, the concept of a standardized interchangeable test adapter (ITA) is very helpful in combination with the mass interconnect receiver on site of the test system.

In testing electronic equipment such as circuit boards, electronic components, and chips, a test fixture is a device or setup designed to hold the device under test (DUT)

or unit under test (UUT) in place and allow it to be tested by being subjected to controlled electronic test signals.

Typically a fixture is DUT/UUT specific and has to be changed in front of the automated test system from time to time to ensure high reuse of the test system for multiple applications.

Examples are a bed of nails fixture for board level testing or fixture for end of line (EoL) testing where the DUT/UUT is already housed in its enclosure and only conducted via its connectors.

Overview of the available types of interchangeable test adapter

The following types of interchangeable test adapter are available:

- R&S PFPID4 interchangeable test adapter (ITA) VPC G20
- R&S PFPID4B interchangeable test adapter (ITA) R&S G20+
- R&S PFPID5 interchangeable test adapter (ITA) VPC G20X
- R&S PFPID6 interchangeable test adapter (ITA) VPC G40x (not scope of this manual)

For ordering information, see [Chapter A, "Ordering information"](#), on page 45.

R&S PFPID5 ITA VPC G20X

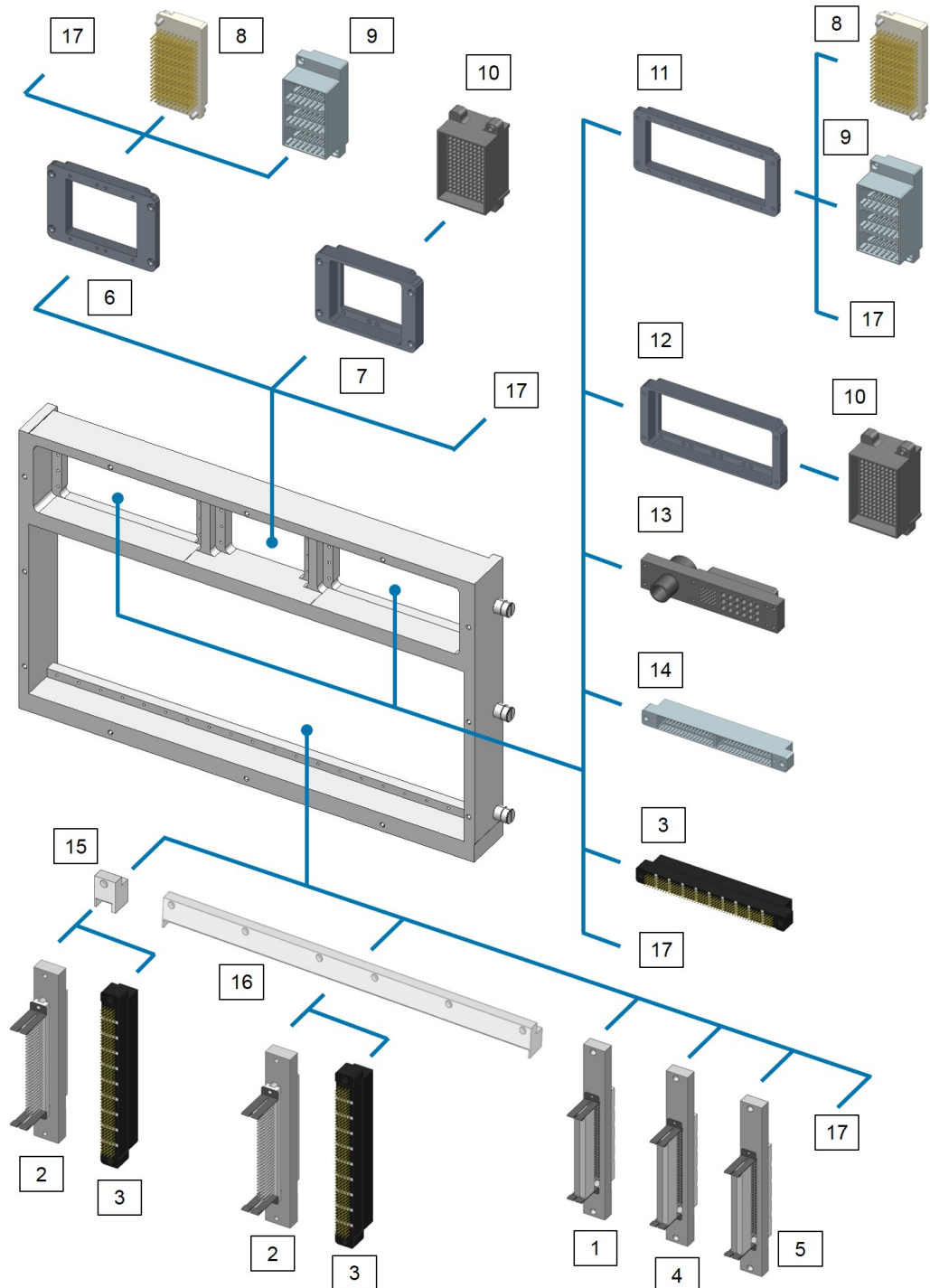


Figure 4-13: R&S PFPID5 interchangeable test adapter ITA G20X, together with different signal modules and mounting accessories

The Figure 4-13 is an example, not all available options are shown.

For explanation of the numbering in Figure 4-13, see Table 4-3

Table 4-3: R&S PFPID4(B), R&S PFPID5 accessory overview

Item	Type	Designation	Slot size
1	R&S PFPIX3B	Signal module, DIN 41612, 96 pin for R&S PFPID4B, R&S PFPID5 and R&S PFPID6	1
2	R&S PFPIX3	Signal module, DIN 41612, 96 pin for R&S PFPID4, R&S PFPID4B, R&S PFPID5 and R&S PFPID6	1
3	R&S PFPIX5	Signal module, VPC 90 series QuadraPaddle, 192 pin, fully loaded with twin female contacts, for ITA R&S PFPID4, R&S PFPID4B, R&S PFPID5 and R&S PFPID6	1
	R&S PFPIX9	Signal module, VPC 90 series VTAC HSD 34 insert for R&S PFPID4B, R&S PFPID5 and R&S PFPID6	
4	R&S PFPIX6	Signal module, DIN 41612, 128 pin for ITA R&S PFPID4B, R&S PFPID5 and R&S PFPID6	1
5	R&S PFPIX7	Signal module, spring contact, 96 pin for ITA R&S PFPID4B, R&S PFPID5 and R&S PFPID6	1
6	R&S PFPI-B2	Adapter plate Pylon, 2 insert for R&S PFPID5 and R&S PFPID6	2
7	R&S PFPI-B4	Adapter plate VPC iCon, 2 insert for R&S PFPID5 and R&S PFPID6	2
8	R&S PFXI-B3	Signal module Pylon, 170 pin for R&S PFPID5 and R&S PFPID6	1
9	R&S PFXI-B2	Signal module, VPC iCon VTAC HSD, 21 insert for R&S PFPID5 and R&S PFPID6	1
10	R&S PFXI-B4	Signal module, VPC iCon QuadraPaddle, 160 position for R&S PFPID5 and R&S PFPID6	1
	R&S PFXI-B5	Signal module VPC iCon TriPaddle, 150 A, 4/4 position for R&S PFPID5 and R&S PFPID6	
11	R&S PFPI-B1	Adapter plate Pylon, 4 insert for R&S PFPID5 and R&S PFPID6	4
12	R&S PFPI-B3	Adapter plate VPC iCon, 4 insert for R&S PFPID5 and R&S PFPID6	4
13	R&S PFPID-B1	Signal module VPC 90 series, 1 vacuum, 56 VPC TriPaddle, 18 mini power or mini coaxial position for R&S PFPID5 and R&S PFPID6	2
14	R&S PFXI-B1	Signal module VPC 90 series VTAC HSD, 34 insert for R&S PFPID5 and R&S PFPID6	1
15	R&S PFPID-BB	Signal module spacing block, 1 slot for R&S PFPID4B, R&S PFPID5 and R&S PFPID6	1
16	R&S PFPID-BS	Signal module spacing rail, 20 slots for R&S PFPID4B, R&S PFPID5 and R&S PFPID6	20

R&S PFPID4B ITA R&S G20+

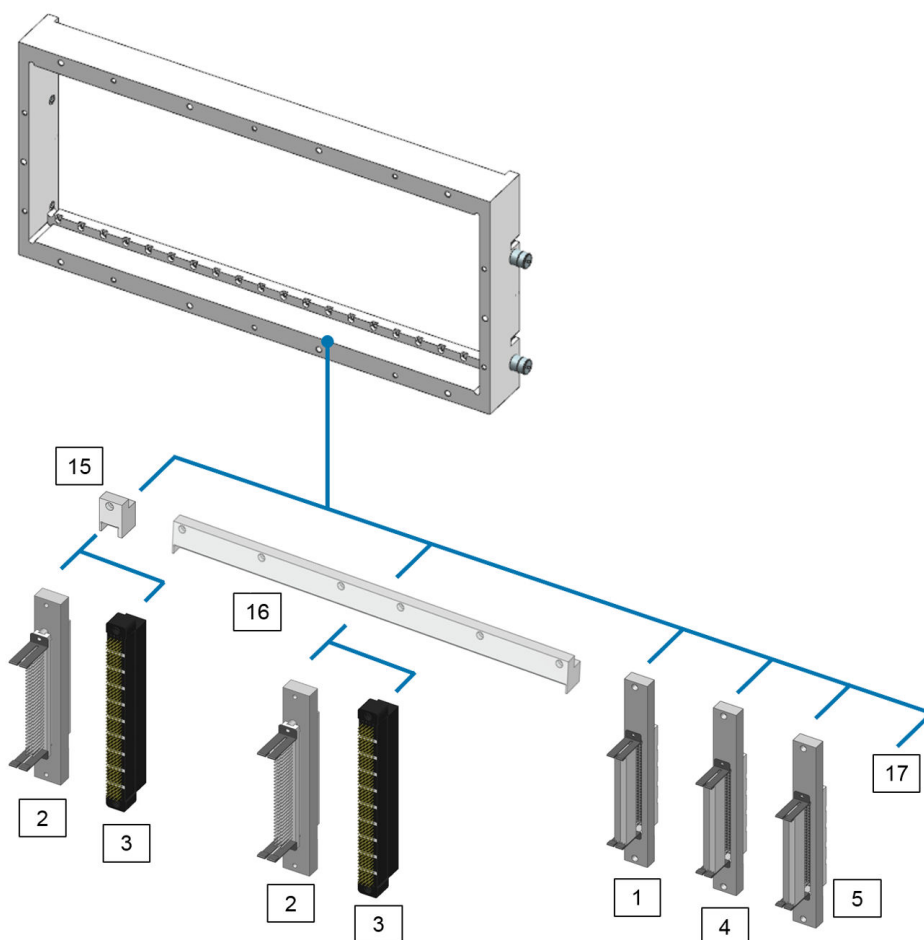


Figure 4-14: R&S PFPID4(B) interchangeable test adapter ITA G20+, together with different signal modules and mounting accessories

The [Figure 4-14](#) is an example, not all available options are shown.

For explanation of the numbering in [Figure 4-14](#), see [Table 4-3](#)

5 Installation

5.1 Thread types at the VPC interface

Different types of signal transmission modules need various screw types for the assembly. In the following are two examples.

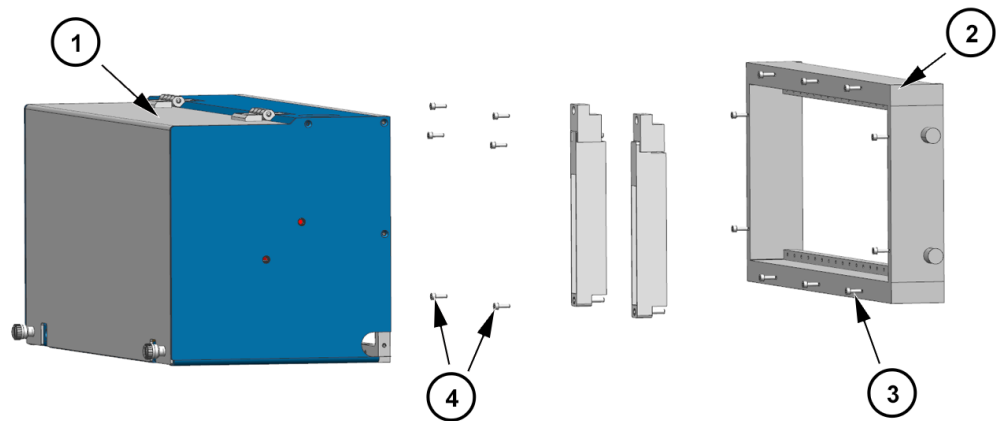


Figure 5-1: Overview of thread types for VPC ITAs and signal transmission modules

- 1 = Interchangeable test adapter enclosure (example for test fixture)
- 2 = Interchangeable test adapter (ITA)
- 3 = 10 screw M4 for mounting interchangeable test adapter (ITA)
- 4 = 3 screws M3 for mounting each module

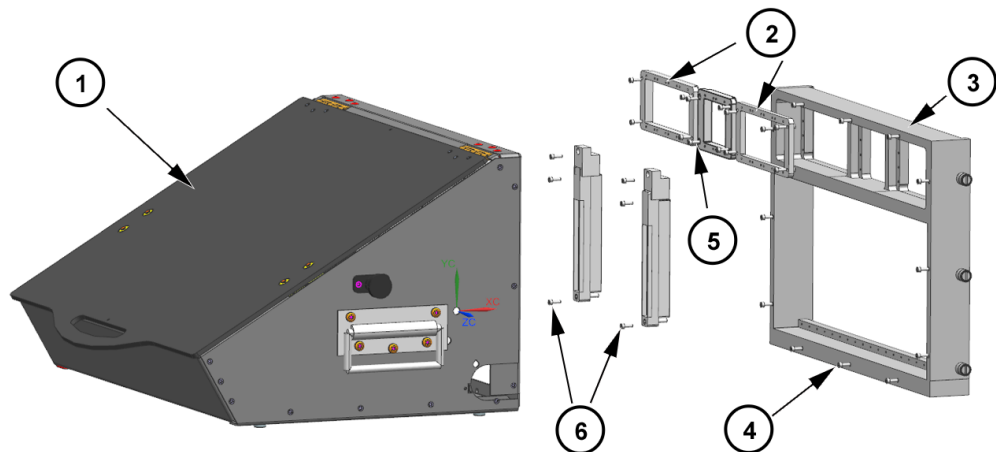


Figure 5-2: Overview of thread types for VPC ITAs and signal transmission modules

- 1 = Interchangeable test fixture enclosure (example for test fixture), appearance is depending from UU/DUT requirement for adaption
- 2 = 4 screws 40 UNC for mounting each frame
- 3 = Interchangeable test adapter (ITA)

- 4 = 10 screw M4 for mounting interchangeable test adapter (ITA)
- 5 = 4 screws M3 for mounting the frame
- 6 = 3 screws M3 for mounting each module

5.2 Installation of VPC interfaces

This chapter describes the installation for R&S TS-PAD4, R&S TS-PAD5 at the R&S TSVP.

5.2.1 Placing the VPC interface at the R&S TSVP

1. Turn the R&S TSVP to the upright position.

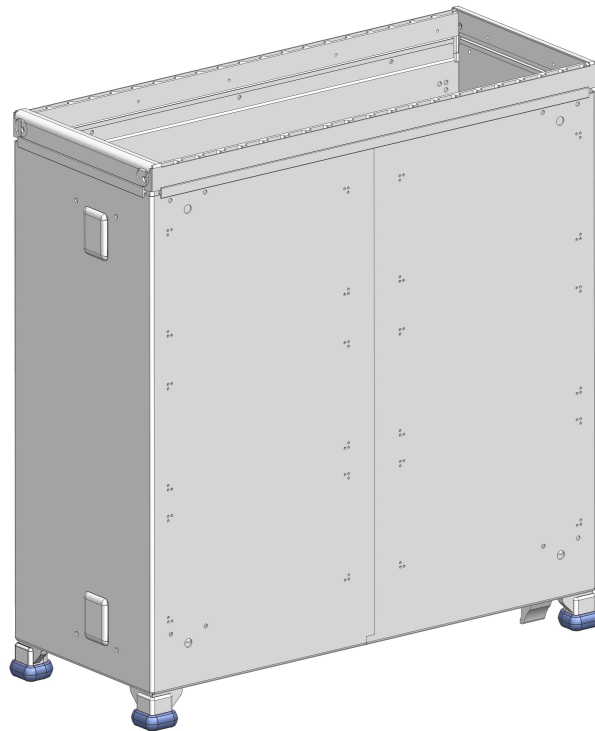
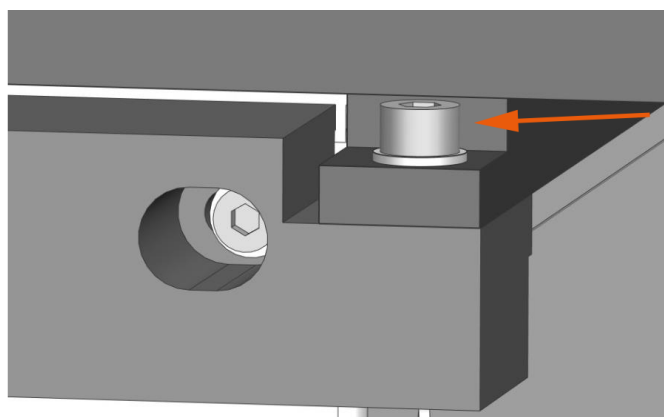


Figure 5-3: R&S TSVP upright position

2. The shown screws in the picture must be loosened at all four corners of the interface.



3. Place the VPC receiver to the front side of the R&S TSVP

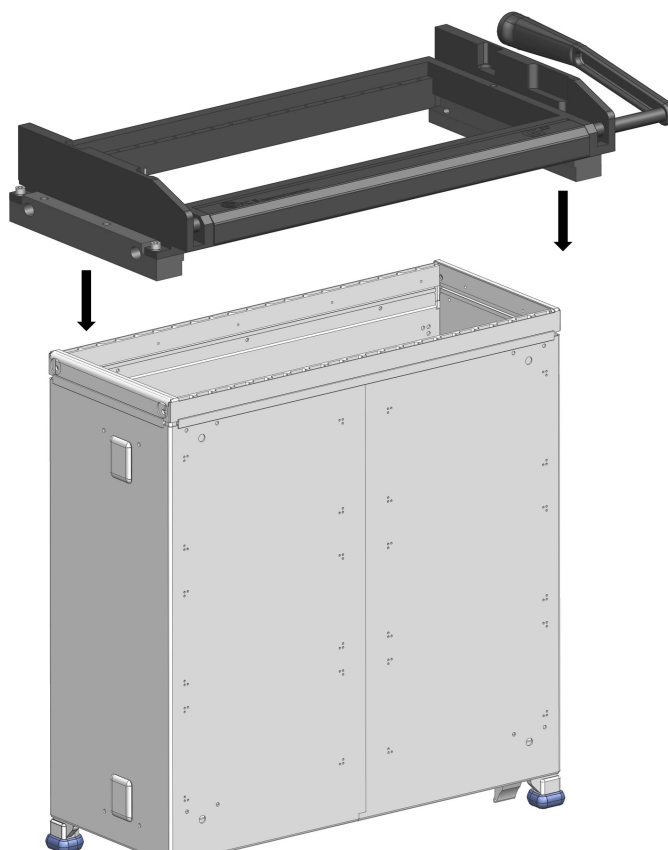


Figure 5-4: Placing of interface

4. Loosely screw in marked screws at all four corners of the interface.

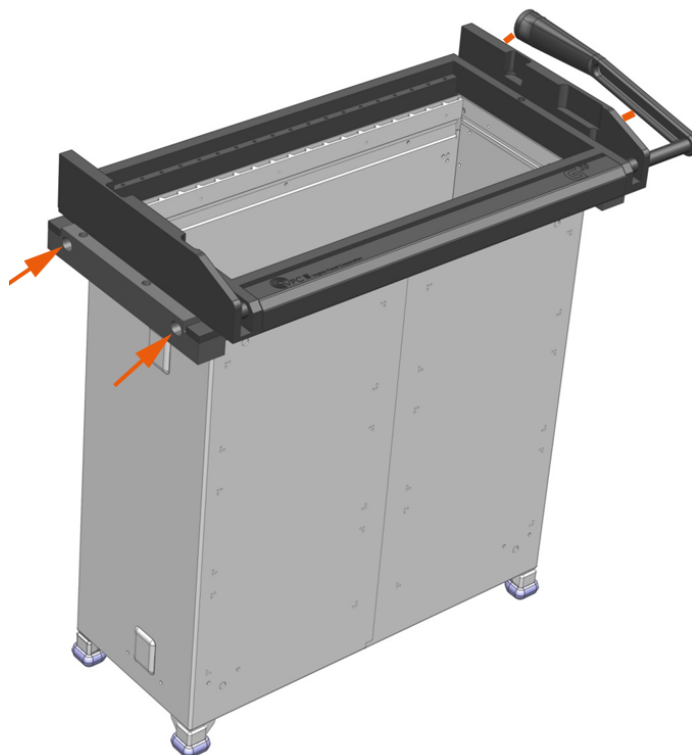


Figure 5-5: Interface on top of the R&S TSVP with loose screws

The interface is on top of the R&S TSVP with loose screws. There are two ways for positioning it, see [Chapter 5.2.1.1, "Mounting the VPC receiver with caliper"](#), on page 32 or [Chapter 5.2.1.2, "Mounting the VPC interface with assembly tools"](#), on page 34.

5.2.1.1 Mounting the VPC receiver with caliper

The positioning requires several dimensions given in the pictures below. Tighten the screws in the sequence shown in [Figure 5-9](#) taking into account the dimensions in the following pictures.

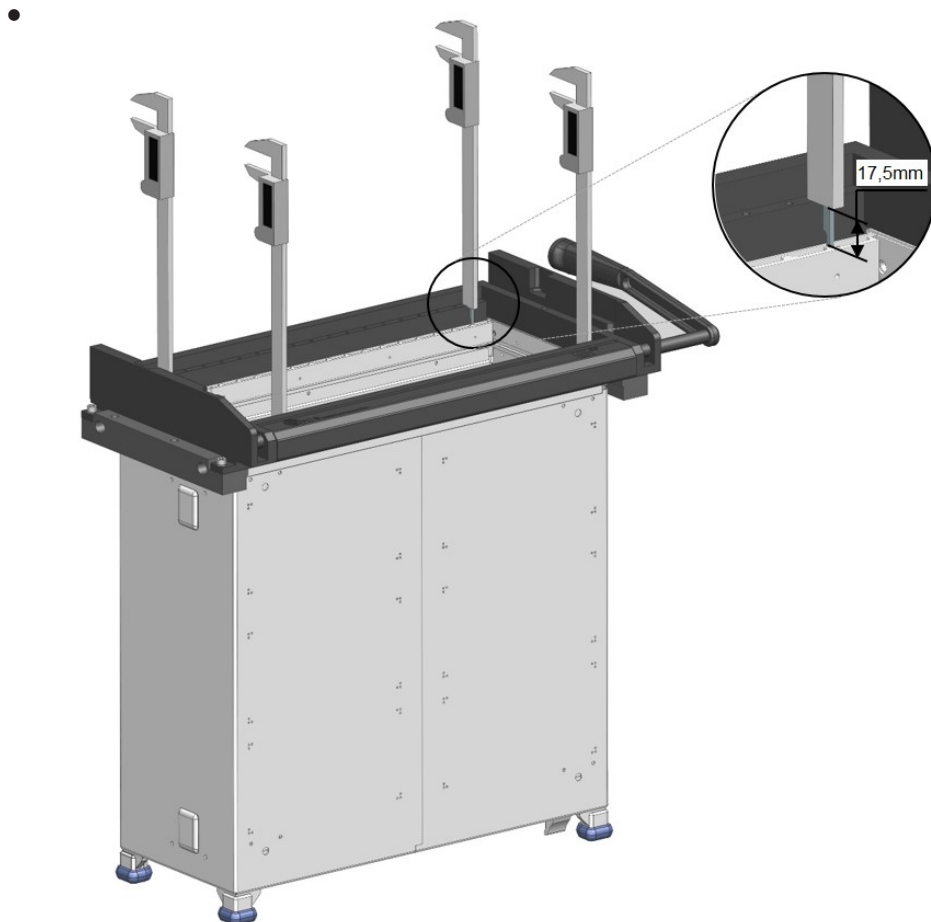


Figure 5-6: Distance adjustment between receiver and R&S TSVP.

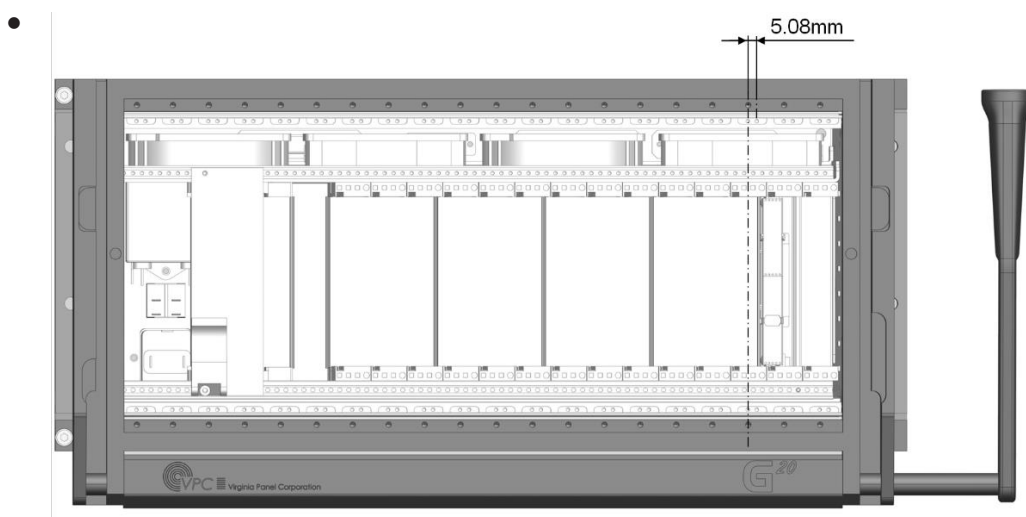


Figure 5-7: Horizontal deviation adjustment between receiver and R&S TSVP.

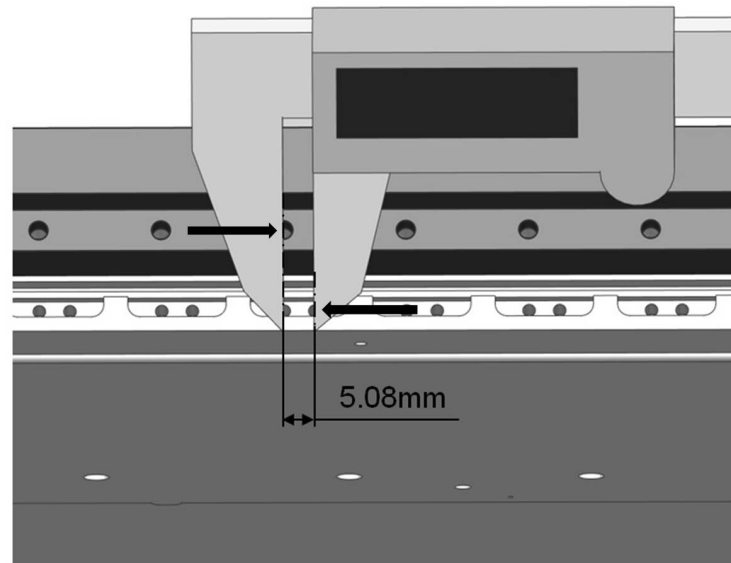


Figure 5-8: Adjust a deviation of 5.08 mm.



Recommended sequence for tightening the screws:

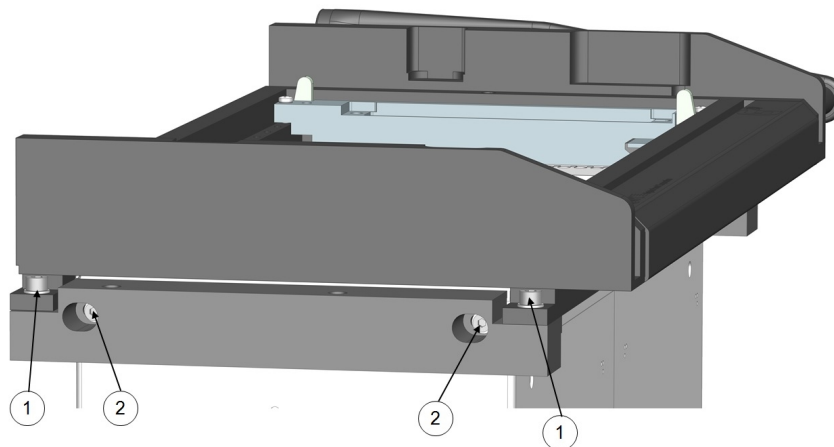


Figure 5-9: Recommended sequence for tightening the screws

Tighten the screws with number 1 first and then the screws with number 2 on both sides of the receiver.

5.2.1.2 Mounting the VPC interface with assembly tools

The usage of assembly tool kit is an easy way to get the VPC interface properly on place.

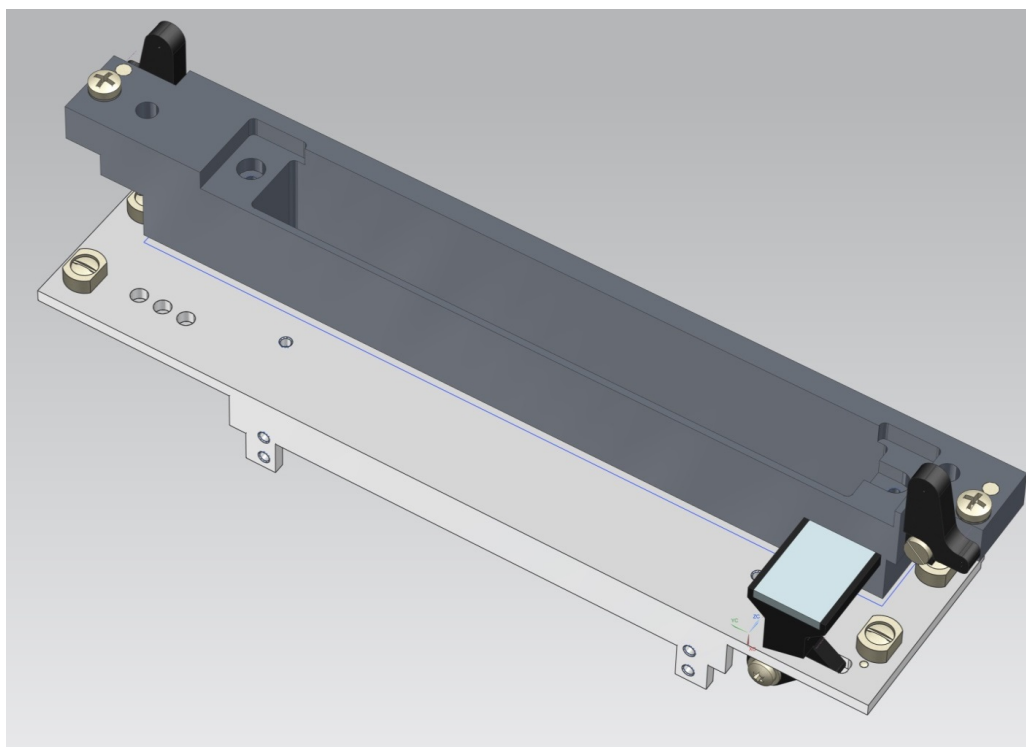


Figure 5-10: Assembly tool TSVP/VPC-RCV 5029.1713.00

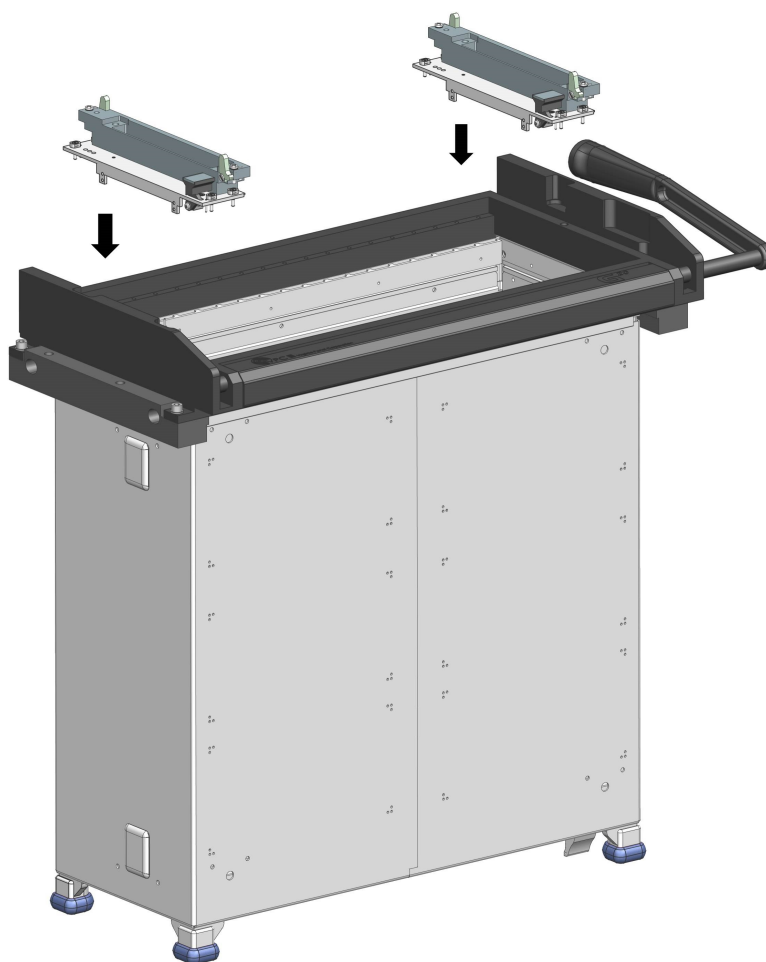


Figure 5-11: Placement of the assembly tools.

Mount one assembly tool into slot 1 and 2 and another one into slot 19 and 20. Tighten the screws of both assembly tools.

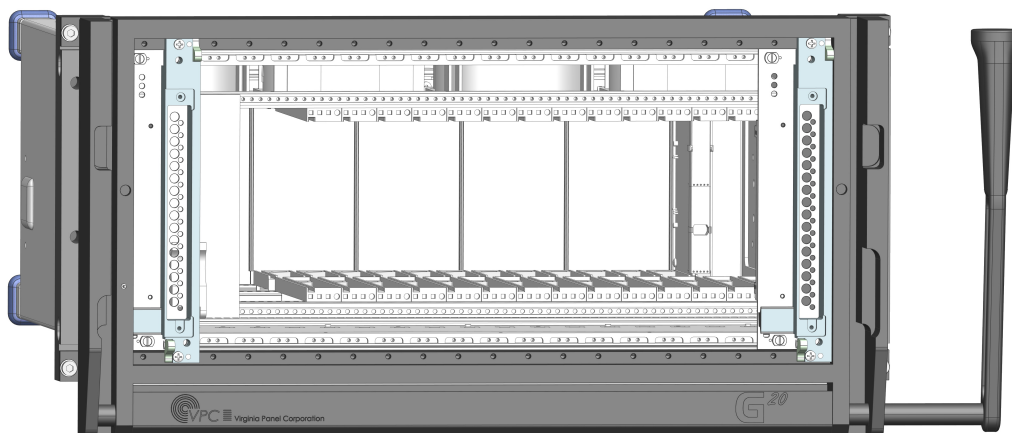
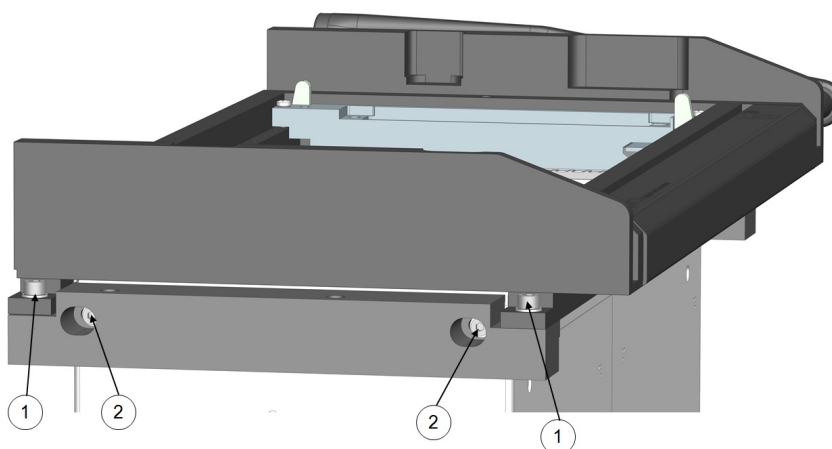


Figure 5-12: Interface and assembly tools placed and pre-mounted.

The interface is adjusted automatically to its proper position and can be finally tightened.



Recommended sequence for tightening the screws:



Tighten the screws with number 1 first and then the screws with number 2 on both sides of the receiver.

Unmount the assembly tool kit from the R&S TSVP.

5.2.1.3 Mounting of the elevation feet at the R&S TSVP (with platform)

1. Unscrew 4x screws (Figure 5-13, item 1).

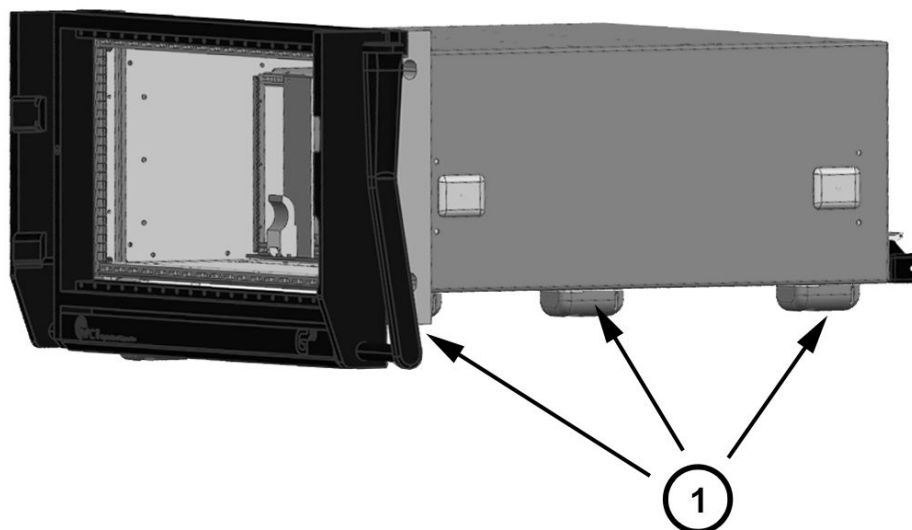


Figure 5-13: R&S TSVP with platform and mounting rail

1 = Rubber foot

2. Remove 4x rubber feet (Figure 5-14, item 2).

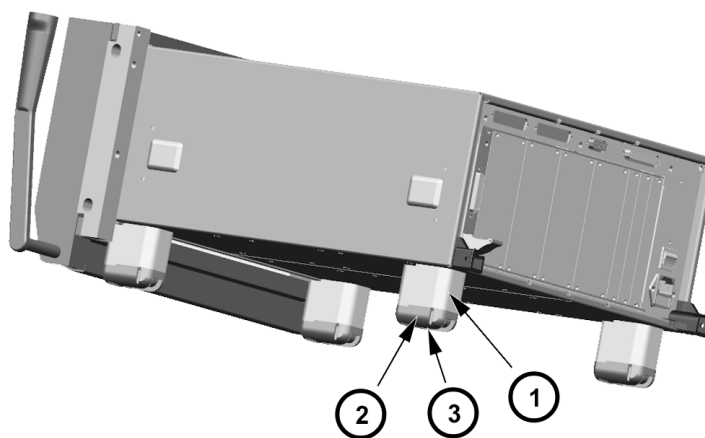


Figure 5-14: Elevation feet mounting

1 = Elevation foot (5008.9350.00)

2 = Rubber foot

3 = Screw (VS DIN7985 M4 X 55 A4)

3. Mount the elevation foot together with the rubber foot (Figure 5-14, item 1 and 2) of the device.
4. Push the screw (Figure 5-14, item. 3) through the drill holes of the rubber foot (Figure 5-14, item. 2) and the elevation foot (Figure 5-14, item. 1).
5. Tighten the screw.

6. Repeat steps 3 to 5 for the remaining feet.

5.2.2 R&S TSVP with platform and mounting rail



When mounting the platform and mounting rail, the R&S PFPAD-BL and R&S PFPAD-BR (Table 4-2) are not necessary. For easier handling, it is recommended to remove them when mounting a platform. If the R&S PFPAD-BL and R&S PFPAD-BR remain mounted, the fixture must be lifted slightly during replacement.

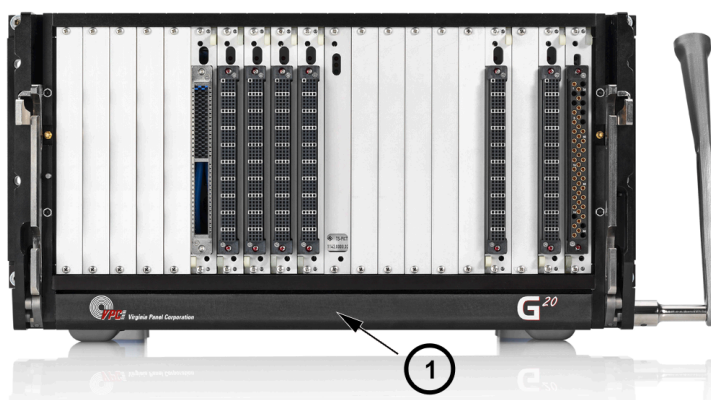


Figure 5-15: Disguise

1 = Disguise

1. Unscrew the screws of the disguise (item 1).
2. Remove the disguise (item 1).

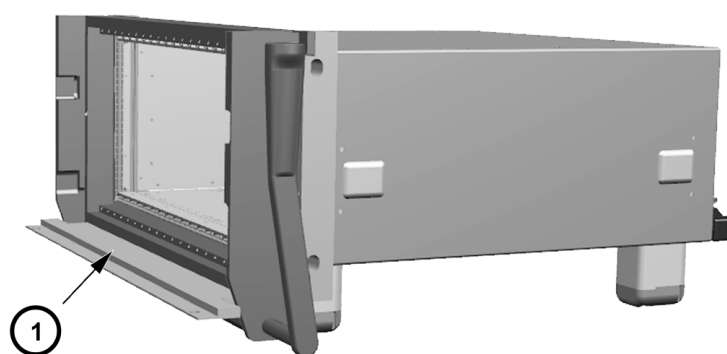


Figure 5-16: Mounting rail

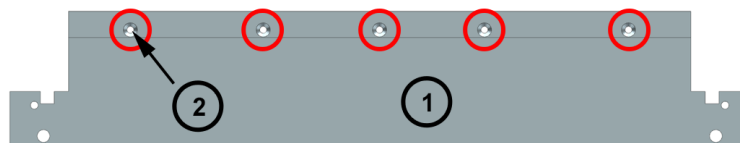


Figure 5-17: Mounting rail

- 1 = Mounting rail
- 2 = Screw (VS 965/ISR M4 X 10 A4 PA)

3. Place the mounting rail (item 1) at the VPC interface lower front side, where the disguise is removed before.
4. Attach the mounting rail (item 1) with 5 x screws (item 2) to the VPC interface.

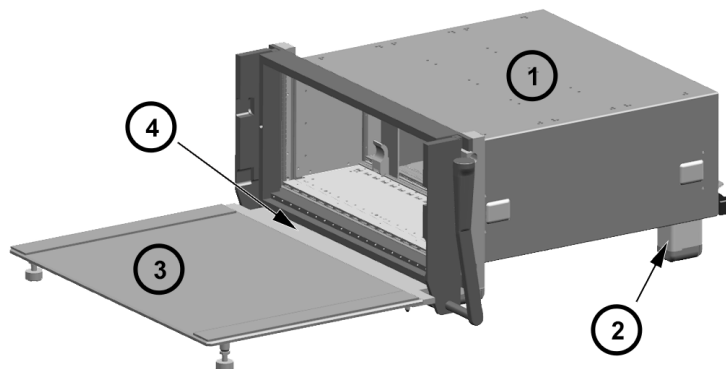


Figure 5-18: R&S TSVP with platform for fixtures

- 1 = R&S TSVP
- 2 = Elevation feet (5008.9350.00)
- 3 = Platform (0385.1116.00)
- 4 = Mounting rail (5001.4476.00)

5. Put the platform (item 4) on top of the mounting rail (item 3).

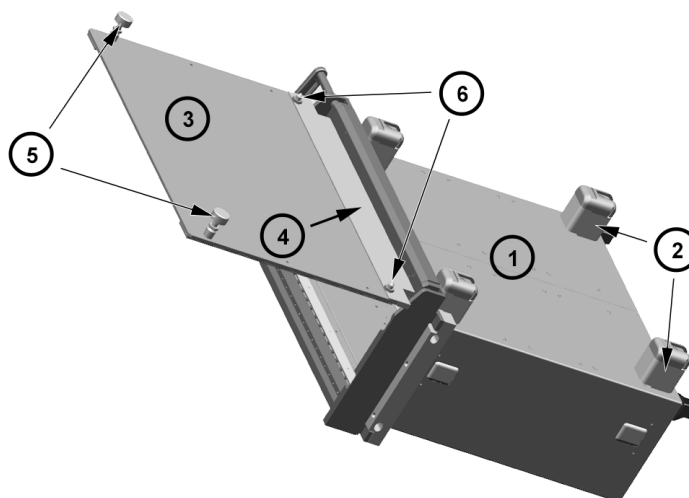


Figure 5-19: Mounting of the platform for fixtures

6. Tighten 2x screws (item 6) to connect the platform (item 3) with the mounting rail (item 4).
7. Adjust the platform (item 4) with the height adjustable platform feet (item 5).

Note: The platform (item 4) must be aligned horizontally.

5.3 R&S PFPIDx (ITA) and R&S TS-PADx (RCV) engagement

NOTICE

Damage due to improper installation

Before assembling the R&S PFPIDx (ITA) with the R&S TS-PADx (RCV), observe the manual of the pull-thru systems on the VPC Homepage (e. g. VPC G20) to maintain a secure engagement.



The R&S PFPAD-BL and R&S PFPAD-BR (VPC flush mount hanger, right/left, see [Table 4-2](#), item 16) are used to secure the fixture from drop-down. Alternatively, the variant of R&S TS-PAD4, R&S TS-PAD5 with platform or, for example, a trolley is used to secure heavy fixtures from drop-down.



Figure 5-20: VPC flush mount hanger mounted, example picture

6 Maintenance, storage and disposal

6.1 Storage

Protect the product against dust. Ensure that the environmental conditions, e.g. temperature range and climatic load, meet the values specified in the data sheet.

6.2 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

For troubleshooting, refer to the manual of the pull-thru systems on the VPC Home-page (e. g. VPC G20).

In case of defect ground contact ([Figure 7-1](#)) it must be replaced. For ordering information, see [Chapter A, "Ordering information"](#), on page 45.



Figure 7-1: Interconnection receiver

7.1 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 7-2: QR code to the Rohde & Schwarz support page

Annex

A Ordering information

Type	Designation	R&S material no.	VPC material no.
R&S TS-PAD4	Mass interconnect receiver VPC G20, compatible with R&S TSVP including: <ul style="list-style-type: none"> • Filler panels • Riser rubber feet's for R&S TSVP • Flush mount hangers • Mounting off all accessories including signal modules (separate items) at the front of the R&S TSVP 	3697.9877.02	310120114
R&S TS-PAD4 with platform	Mass interconnect receiver VPC G20, compatible with R&S TSVP including: <ul style="list-style-type: none"> • Filler panels • Riser rubber feet's for R&S TSVP • Platform and mounting rail • Mounting off all accessories including signal modules (separate items) at the front of the R&S TSVP 	3697.9877.03	
R&S TS-PAD5	Mass interconnect receiver VPC G20X, compatible with R&S TSVP including: <ul style="list-style-type: none"> • Filler panels • Riser rubber feet's for R&S TSVP • Flush mount hangers • Mounting off all accessories including signal modules (separate items) at the front of the R&S TSVP 	3697.9919.02	310120140
R&S TS-PAD5 with platform	Mass interconnect receiver VPC G20X, compatible with R&S TSVP including: <ul style="list-style-type: none"> • Filler panels • Riser rubber feet's for R&S TSVP • Platform and mounting rail • Mounting off all accessories including signal modules (separate items) at the front of the R&S TSVP 	3697.9919.03	
R&S PFPID4	Interchangeable test adapter (ITA) frame VPC G20	5008.9996.00	410120115
R&S PFPID4B	Interchangeable test adapter (ITA) frame R&S G20+	5026.9436.00	
R&S PFPID5	Interchangeable test adapter (ITA) frame VPC G20X	5008.4707.00	410120160
R&S PFPID-BB	ITA signal module distance block for R&S PFPID4B and R&S PFPID5	5008.4671.00	
R&S PFPID-BS	ITA signal module distance rail for R&S PFPID4B and R&S PFPID5, 20 slot	5008.9667.00	
Ground contact	Ground contact for R&S TS-PAD4, R&S TS-PAD5, see Figure 7-1		254948