

R&S® ZVAX-TRM

Extension Unit

Configurable signal conditioning for measurements on active components



R&S®ZVAX-TRM Extension Unit At a glance

The configurable R&S®ZVAX-TRM extension unit is used together with an R&S®ZVA/ZVT¹⁾ network analyzer to provide signal conditioning for demanding measurements on active DUTs. For example, it allows measurements on pulsed signals or noise figure measurements on transmit/receive (T/R) modules. Together with an R&S®ZVA network analyzer, the R&S®ZVAX-TRM provides customized test sets for applications up to 24/40/50/67 GHz²⁾.

¹⁾ The R&S®ZVAX-TRM24/40/50/67 can be combined with any R&S®ZVA8/24/40/50/67 or R&S®ZVT8/20 network analyzer. The extension unit is supplied as standard with the RF interconnection cables for the corresponding R&S®ZVA24/40/50/67 model.

²⁾ Restrictions on some options for the 67 GHz model.

The comprehensive characterization of power amplifiers or T/R modules requires test equipment that supports diverse test scenarios. For example, test equipment must be able to provide and handle both very high and very low powers without any modifications to the test setup, or perform intermodulation and group delay measurements on converters with an embedded local oscillator (LO). The R&S®ZVAX-TRM extension unit has been designed to meet these requirements. Depending on the measurement settings, the signals from an R&S®ZVA/ZVT network analyzer are conditioned in the R&S®ZVAX-TRM and either routed back to the network analyzer or output at the R&S®ZVAX-TRM ports. The R&S®ZVAX-TRM supports the following main test scenarios:

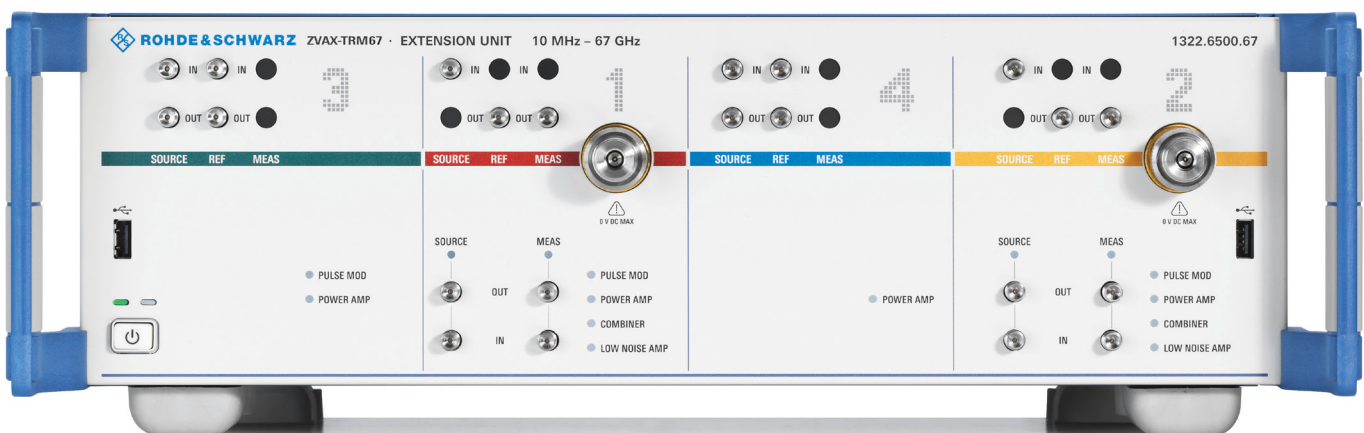
- Measurements at high powers
- Intermodulation measurements
- Pulsed signal measurements
- Noise figure measurements

The R&S®ZVAX-TRM base unit allows two-port measurements at high power levels up to +43 dBm. Diverse options are available to tailor the unit to user requirements.

The RF ports, connectors, internal components and connecting cables on the R&S®ZVAX-TRM extension unit are arranged so that the unit can be operated with a two-port or four-port R&S®ZVA network analyzer.

Key facts

- Extension unit for an R&S®ZVA/ZVT network analyzer for measurements on T/R modules, receivers, transceivers and power amplifiers
- Base unit supports power levels up to +43 dBm
- Options for pulse modulation, amplification, high-power, noise figure and intermodulation measurements
- R&S®ZVAX-TRM models up to 24/40/50/67 GHz
- Flexible configuration for the required application
- Straightforward dialogs for measurement configuration
- Automatic detection and control of R&S®ZVAX-TRM via USB interface



R&S®ZVAX-TRM Extension Unit Benefits and key features

Configurable test system for characterizing T/R modules

- Excellent performance data for measurements on T/R modules
- R&S®ZVAX-TRM basic operating concept
- Less downtime, uncompromised network analyzer performance data

▷ [page 4](#)

Compact solution with open architecture

- Signal flow between the R&S®ZVA and the R&S®ZVAX-TRM
- Signal access points in the R&S®ZVAX-TRM for integrating external components and instruments

▷ [page 6](#)

Customized configuration

- R&S®ZVAX-TRM base unit
- R&S®ZVAXxxB712/B73 pulse modulators
- R&S®ZVAXxxB31/B32 low-noise preamplifiers
- R&S®ZVAXxxB112/B134 output amplifiers
- R&S®ZVAXxxB213/B224 combiners

▷ [page 8](#)

R&S®ZVAX-TRM interfaces and control

- Configuration of R&S®ZVAX-TRM extension unit
- Rear-panel interfaces

▷ [page 10](#)

Typical system configurations

- Measurements on T/R modules with combined transmit/receive ports
- Measurements on T/R modules with an input circulator (three ports)
- High-power and hot S_{22} measurements

▷ [page 12](#)

Configurable test system for characterizing T/R modules

Excellent performance data for measurements on T/R modules

Characterizing T/R modules for radar or satellite applications places high demands on a test system's performance and flexibility. The test system needs to support a variety of test modes. In many cases, it must measure high output powers while at the same time delivering very low, highly accurate stimulus powers. The system must provide intermodulation measurements on pulsed signals, also on frequency-converting DUTs. As a rule, noise figure and/or spectral measurements are also required. DUTs with separate TX and RX paths and an antenna connector call for three-port measurements and typically require two LO signals in addition. The R&S®ZVAX-TRM extension unit supports this wide range of measurements in a compact, individually configurable design.

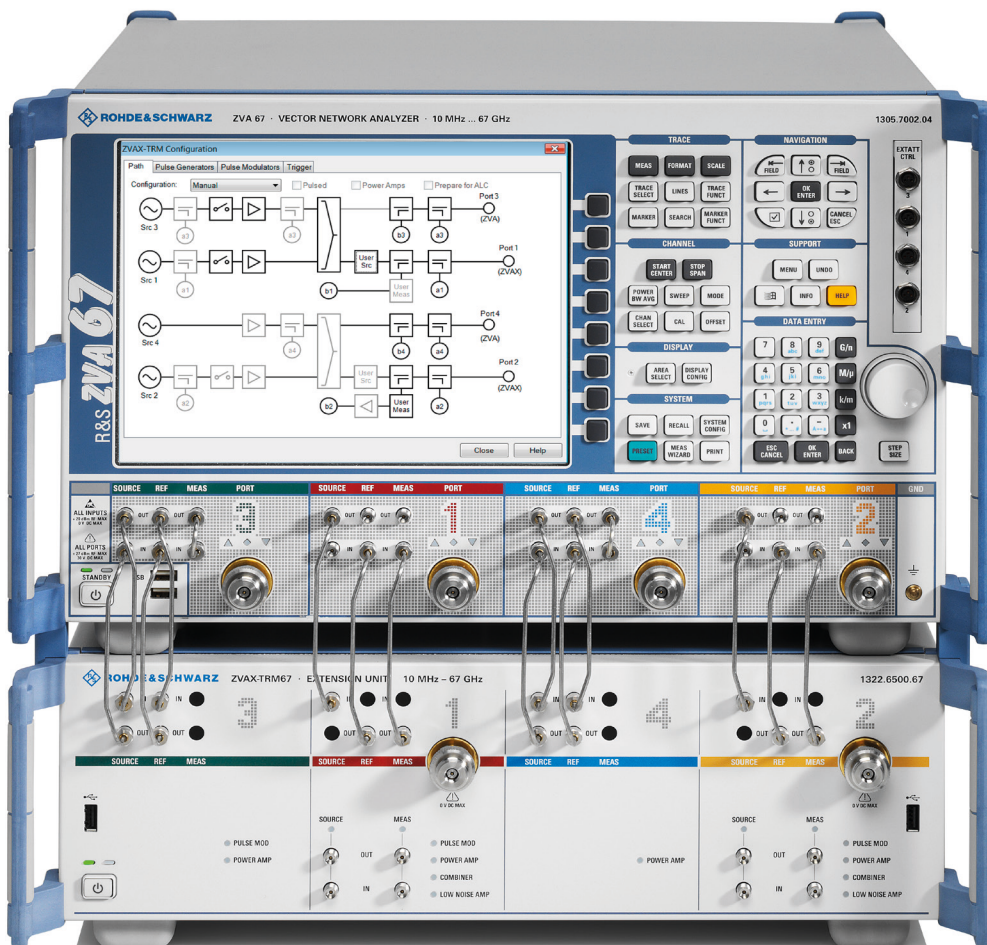
R&S®ZVAX-TRM basic operating concept

The stimulus and measured signals from the R&S®ZVA are fed to the R&S®ZVAX-TRM extension unit via the network analyzer's direct generator/receiver inputs (R&S®ZVAX-B16 options). The signals are modified in the extension unit and either output via the R&S®ZVAX-TRM ports or fed back to the R&S®ZVA and output via the R&S®ZVA ports. The R&S®ZVAX-TRM includes as standard a high-power test set with access to the unit's generator and receiver paths. The test set can be expanded with optional pulse modulators, combiners, low-noise preamplifiers (LNAs) in the receiver paths, and output amplifiers. The individual components are activated via mechanical switches as required for a given measurement setup.

Less downtime, uncompromised network analyzer performance data

The R&S®ZVAX-TRM decouples signal conditioning from the network analyzer. This offers a number of economic and technical benefits. If several network analyzers are available to perform various tasks, not all of the analyzers need to be equipped with all options. The R&S®ZVAX-TRM adds the required options to a given network analyzer. This means that fewer options are needed for the network analyzer itself, thus reducing investment costs. If the R&S®ZVAX-TRM is temporarily not available, the R&S®ZVA can be used to perform other tasks. Use of the R&S®ZVA in conjunction with the R&S®ZVAX-TRM offers another advantage: the extension unit provides additional protection for the R&S®ZVA during measurements, as the R&S®ZVAX-TRM high-power frontend is used instead of the R&S®ZVA ports 1 and 2.

Decoupling signal conditioning from the network analyzer offers yet another benefit: measurements requiring no signal conditioning are carried out with uncompromised network analyzer performance, i.e. with the instrument's superior dynamic range, sensitivity and stability.



Test system consisting of R&S®ZVA and R&S®ZVAX-TRM.

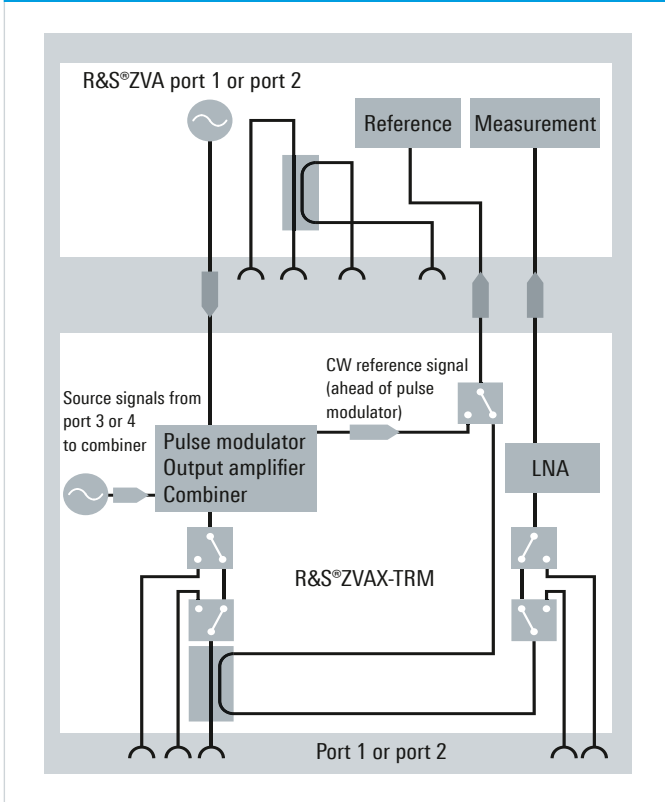
Compact solution with open architecture

Signal flow between the R&S®ZVA and the R&S®ZVAX-TRM

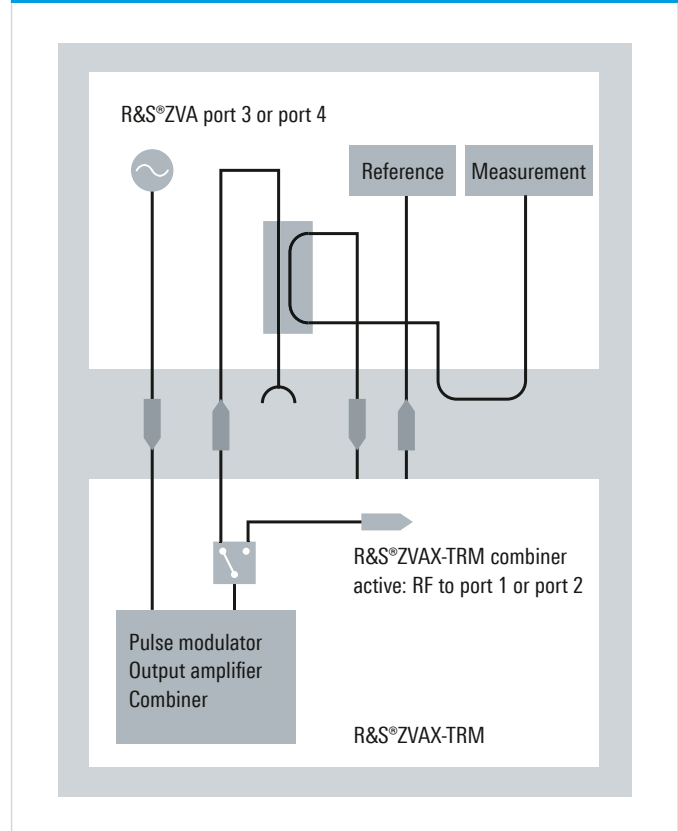
The output signals from the R&S®ZVA are fed directly to the R&S®ZVAX-TRM via the analyzer's source outputs (SOURCE OUT):

- In the case of ports 1 and 2, the ports of the R&S®ZVAX-TRM extension unit take over the functions of the network analyzer ports. The internal couplers of the R&S®ZVA are not used, or they can be used like external couplers in the test setup. The reference and measured signals are transferred to the R&S®ZVA from the couplers in the R&S®ZVAX-TRM via the analyzer's reference/measurement inputs (R&S®ZVAX-B16 options)
- In the case of ports 3 and 4, the output signals from the network analyzer are modified in the R&S®ZVAX-TRM and returned to the R&S®ZVA together with the reference signals. In this case, the ports of the network analyzer are used

Signal routing for R&S®ZVA port 1 and R&S®ZVAX-TRM port 1, and for R&S®ZVA port 2 and R&S®ZVAX-TRM port 2



Signal routing for R&S®ZVA port 3 and port 4 via R&S®ZVAX-TRM



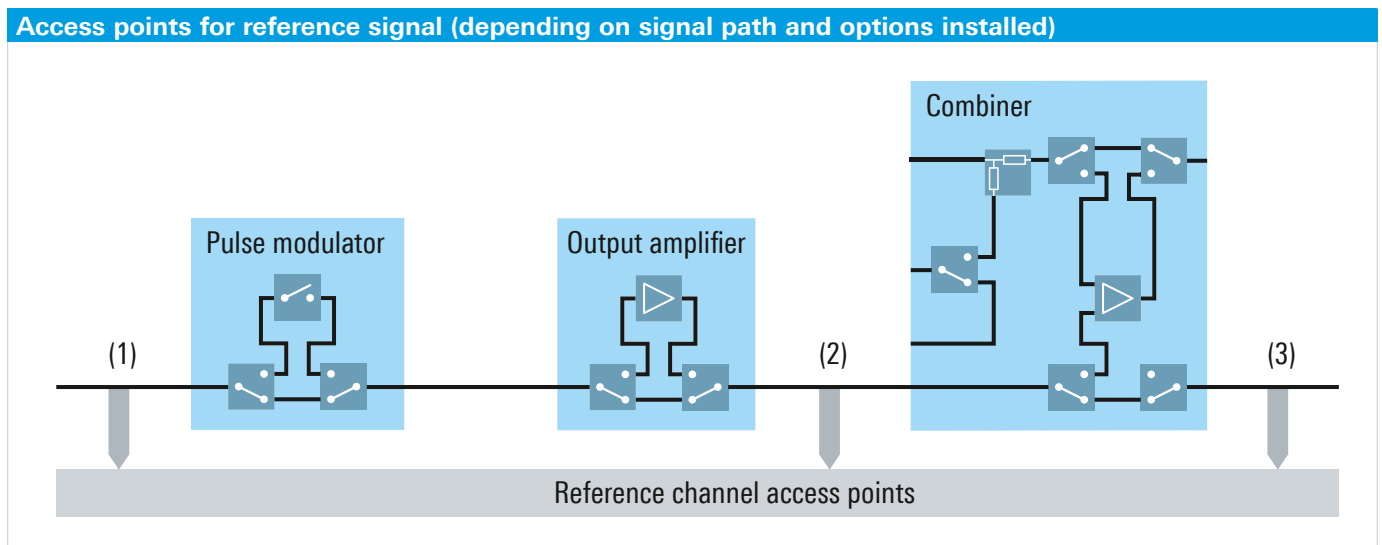
Signal access points in the R&S®ZVAX-TRM for integrating external components and instruments

Different measurement tasks, e.g. measuring power or pulse profile, call for different test setups. To meet these requirements, the R&S®ZVAX-TRM offers the following possibilities:

- **Access to the generator paths** of R&S®ZVAX-TRM ports 1 and 2 for connecting external power amplifiers and isolators
- **Access to the receiver paths** of R&S®ZVAX-TRM ports 1 and 2 for connecting attenuators for power measurements. Via a mechanical switch, the measured signal can be output to an external instrument such as a spectrum analyzer or power sensor

▪ **Access to reference signal** at various points. This feature mainly serves to utilize the automatic level control (ALC) function of the R&S®ZVA in applications that call for highly precise output powers. The reference signal can be accessed at various points:

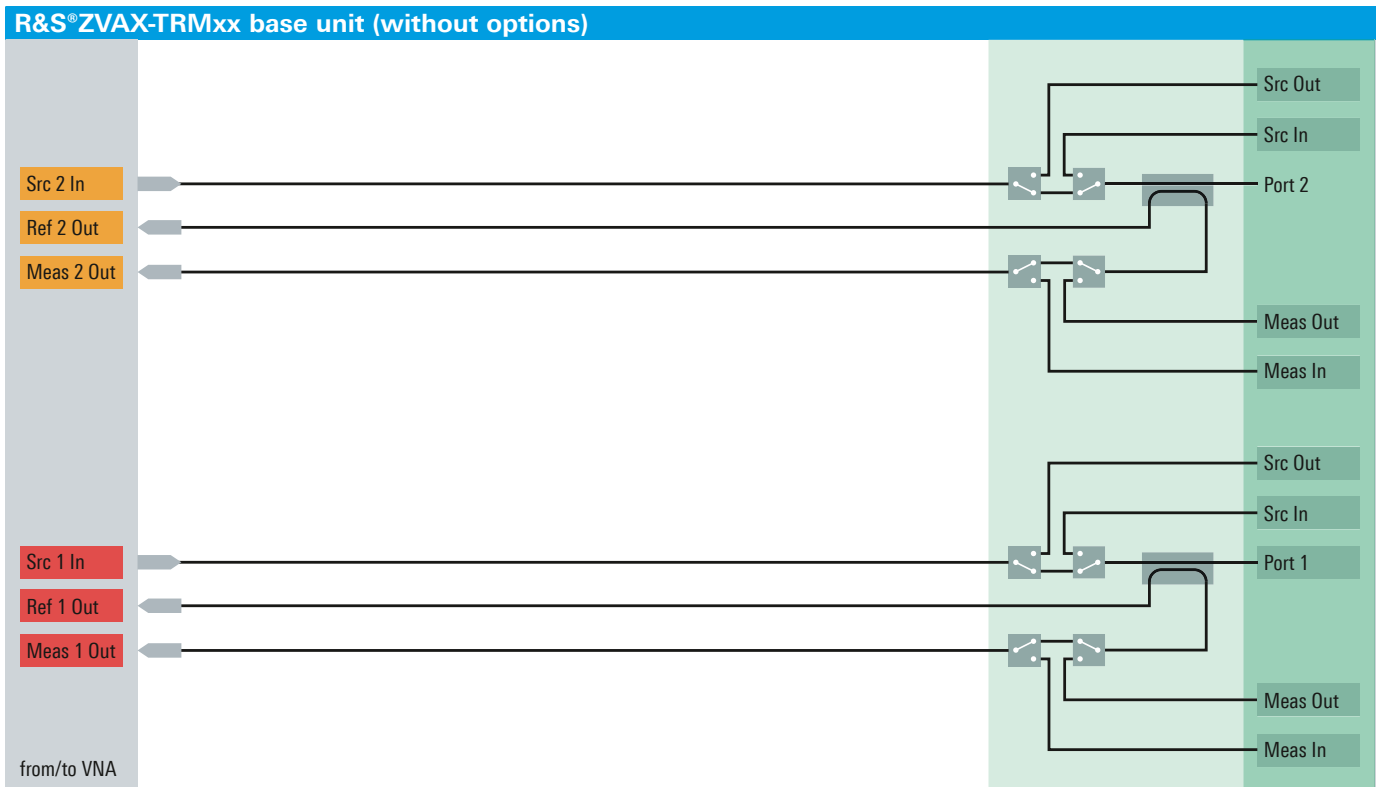
- **Access ahead of pulse modulator (1):**
In the case of very short pulses, the ALC may not be able to directly evaluate the modulated input signal due to its finite settling time. In such cases, the (unmodulated) signal ahead of the pulse modulator can be used for level control
- **Access after output amplifier and pulse modulator (2):**
Allows undesired drift effects from the output amplifier to be taken into account
- **Access after combiner in R&S®ZVAX-TRM (3):**
Takes into account undesired drift effects from all components in a test setup that lie ahead of the reference plane (calibration plane)



Customized configuration

R&S®ZVAX-TRM base unit

The R&S®ZVAX-TRM base unit contains all the required control interfaces and trigger inputs and outputs, plus the high-power couplers for ports 1 and 2, as well as access to the R&S®ZVAX-TRM generator and receiver paths. In its basic configuration, the R&S®ZVAX-TRM supports high-power two-port measurements up to +43 dBm. For these measurements, it may be necessary to loop external preamplifiers and/or isolators into the generator path. External attenuators may have to be looped into the receiver path in order to prevent receiver compression. These additional components must be dimensioned to match the required application and therefore need to be supplied by the customer.



R&S®ZVAXxxB712/B73 pulse modulators

These options expand the base unit with up to three pulse modulators that can be inserted into the signal paths of ports 1, 2 and 3. Using an R&S®ZVAX-TRM equipped with these options, a two-port R&S®ZVA can perform bidirectional pulse measurements. A four-port R&S®ZVA with two or four internal sources supports intermodulation measurements on pulsed signals. Pulsed measurements are configured in the R&S®ZVA firmware. The pulse modulators are controlled via an interface on the R&S®ZVAX-TRM rear panel or with an external pulse generator. Each pulse modulator contains an internal splitter, allowing the unmodulated signal to be used as a reference.

R&S®ZVAXxxB31/B32 low-noise preamplifiers

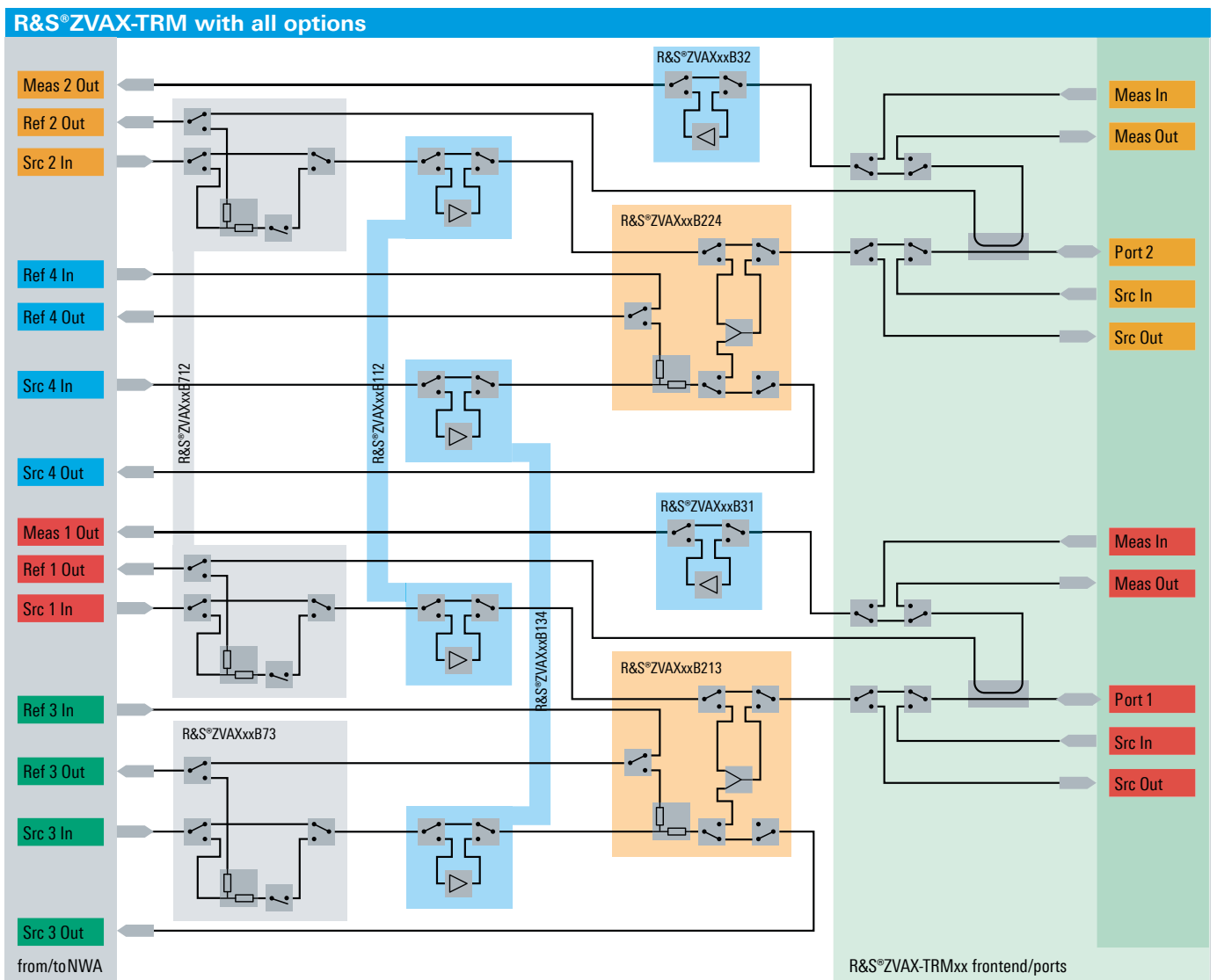
These options can be inserted into the R&S®ZVAX-TRM receiver paths to allow noise figure measurements on low gain, low noise figure DUTs.

R&S®ZVAXxxB112/B134 output amplifiers

These options add two amplifiers to ports 1 and 2 and ports 3 and 4 as a group in each case. The amplifiers optimally compensate for frequency-dependent internal losses in the R&S®ZVAX-TRM, allowing the output power levels of an R&S®ZVA base unit to be achieved even with a fully configured R&S®ZVAX-TRM (all options installed). Higher power levels require the insertion of a user-supplied output amplifier.

R&S®ZVAXxxB213/B224 combiners

These options greatly simplify intermodulation and group delay measurements on mixers since the source signals from R&S®ZVA ports 1 and 3 and from ports 2 and 4 are combined into two-tone signals already in the R&S®ZVAX-TRM. This allows a four-port R&S®ZVA with two internal sources to measure a T/R module's intermodulation characteristics in both directions.

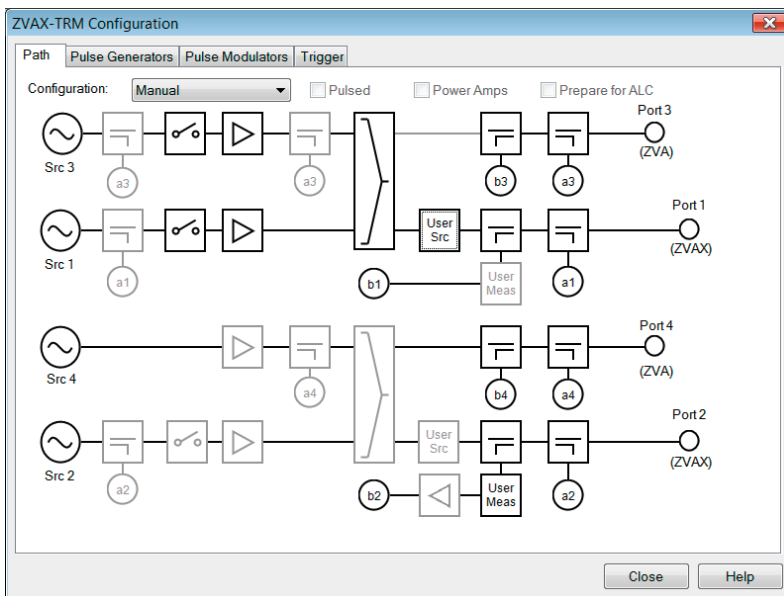


R&S®ZVAX-TRM interfaces and control

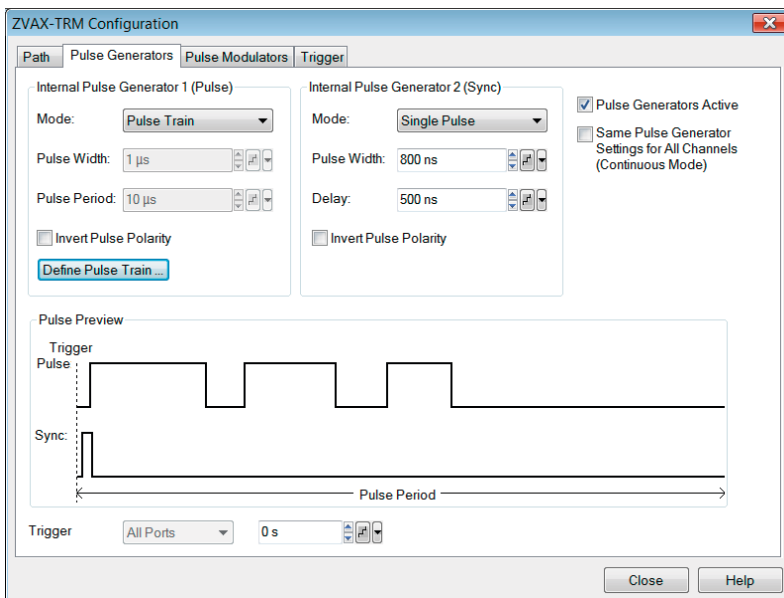
Configuration of R&S®ZVAX-TRM extension unit

The R&S®ZVAX-TRM is configured and controlled in the R&S®ZVA firmware. A straightforward block diagram shows all switch positions and signal paths, so that the user has everything in view and can adapt the active setup as required with a mouse click. The various measurement configurations are saved as part of the R&S®ZVA instrument setup and are available at any time.

In the R&S®ZVAX-TRM configuration dialog, the user parameterizes the two sweep synchronous pulse trigger generators in the R&S®ZVA and allocates them to up to three optional pulse modulators in the R&S®ZVAX-TRM. Alternatively, trigger signals from external generators can be used to control the pulse modulators in the R&S®ZVAX-TRM, e.g. during antenna measurements.



Configuration of the R&S®ZVAX-TRM on the R&S®ZVA.



Parameterizing the pulse generators in the R&S®ZVA.

Rear-panel interfaces

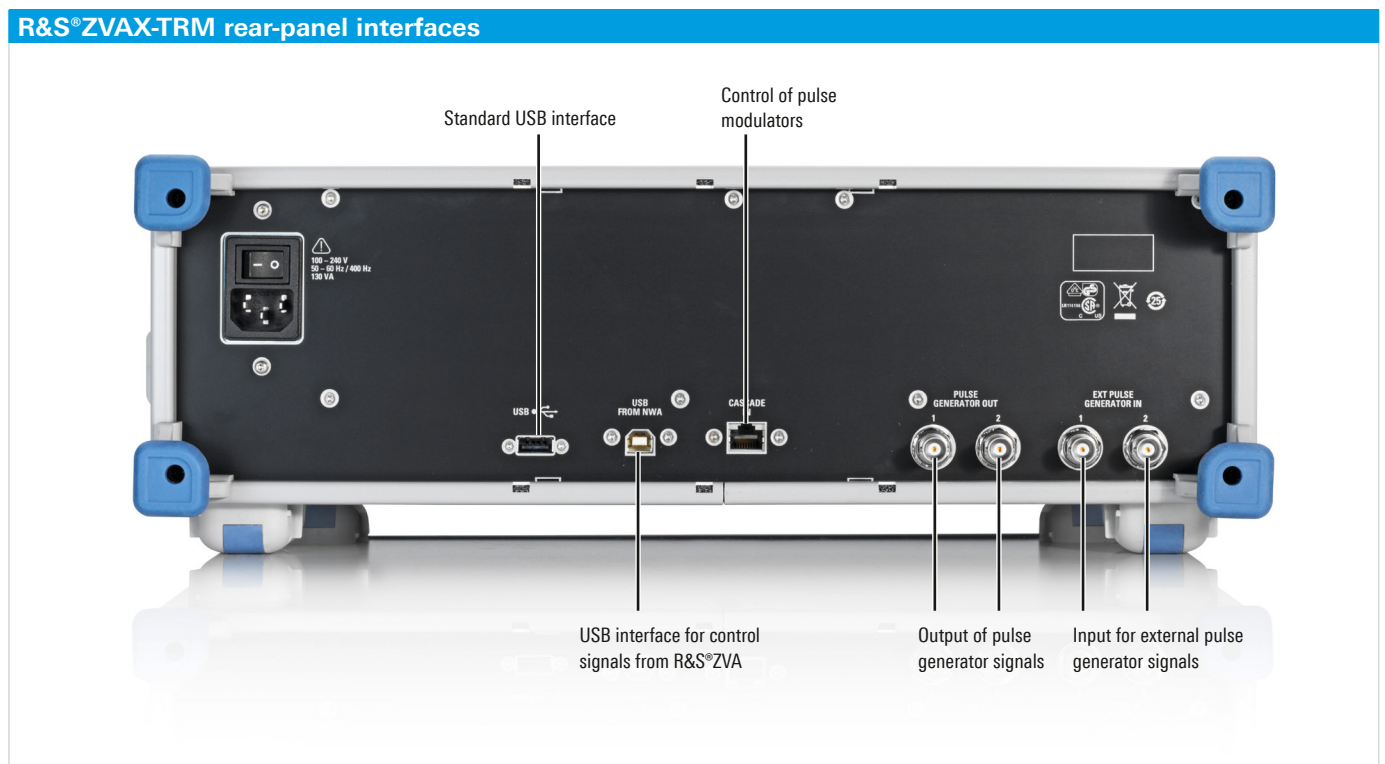
The mechanical switches in the R&S®ZVAX-TRM are controlled via a USB interface on the rear (USB FROM NWA).

The R&S®ZVA has two optional internal pulse trigger generators that are used to control the pulse modulators in the R&S®ZVAX-TRM. The pulse generator signals from the R&S®ZVA are transferred to the extension unit via the CASCADE interface.

Alternatively, external signals can be used to control the R&S®ZVAX-TRM pulse modulators. These signals are applied via the EXT PULSE GENERATOR IN ports.

Two BNC connectors (PULSE GENERATOR OUT) are available for monitoring pulse generator signals looped through from the R&S®ZVA and for controlling external switches.

The R&S®ZVAX-TRM also contains an extra, standard USB interface on its rear for connecting storage media, a mouse, keyboard, etc. Integration of the R&S®ZVAX-TRM therefore does not reduce the number of USB ports available for connecting peripheral equipment. Two further USB connectors are provided on the R&S®ZVAX-TRM front panel, e.g. for connecting R&S®NRP-Zxx power sensors.

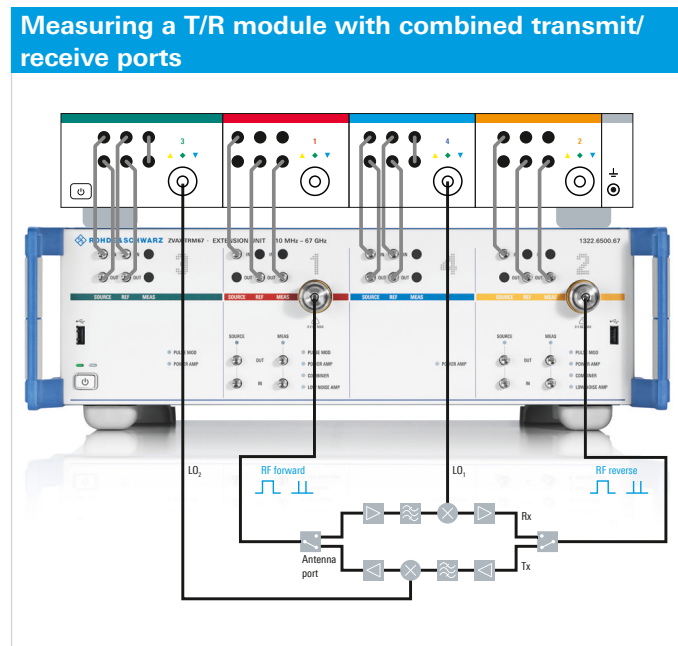


Typical system configurations

Measurements on T/R modules with combined transmit/receive ports

An especially compact and straightforward test setup is obtained for T/R modules whose RX/TX paths are combined by switching them to a single port. In conjunction with a four-port R&S®ZVA with four internal sources, the following signals can be provided without external generators: RF input signal, RF two-tone signal, and the LO₁ and LO₂ auxiliary signals. This configuration is not only highly compact, it also delivers exceptionally high measurement speed, since the internal signal sources operate synchronously with one another and also with the sweep, eliminating the need for controlling an external generator. A T/R module needs to be connected only once to allow its full characterization, including in particular the following parameters and features:

- Measurement of RX and TX paths
 - Gain, matching, conversion gain
 - Phase, group delay
 - Compression, intermodulation
 - Noise figure
 - Bidirectional pulsed measurements
 - Hot S_{22}
 - RX/TX crosstalk
- Flexible configuration, e.g. RX and TX gain as a function of LO levels
- Direct control of DUT switches via R&S®ZVA USER CONTROL port (TTL signals)



Measurements on T/R modules with an input circulator (three ports)

Somewhat more complex are T/R modules with separate RX and TX ports. Using an R&S®ZVA with four internal sources allows the key parameters to be determined even for this type of module without having to change the DUT connections:

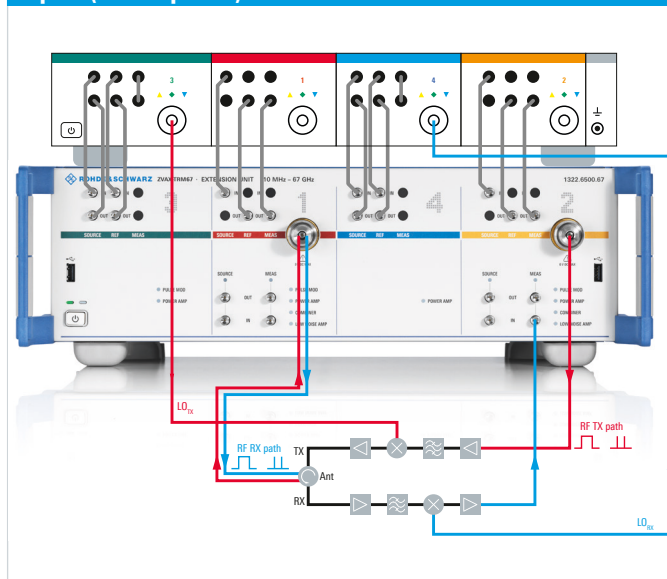
- Measurement of RX path (blue lines)
 - RF signal from R&S®ZVAX-TRM port 1 (CW, pulsed, two-tone signal)
 - LO_{RX} from R&S®ZVA port 4
- Measurement of TX path (red lines)
 - RF signal from R&S®ZVAX-TRM port 2 (CW, pulsed, two-tone signal)
 - LO_{TX} from R&S®ZVA port 3
- Measurement parameters for RX and TX paths same as for modules with combined RX/TX ports, but without hot S_{22} and RX/TX crosstalk measurements

High-power and hot S_{22} measurements

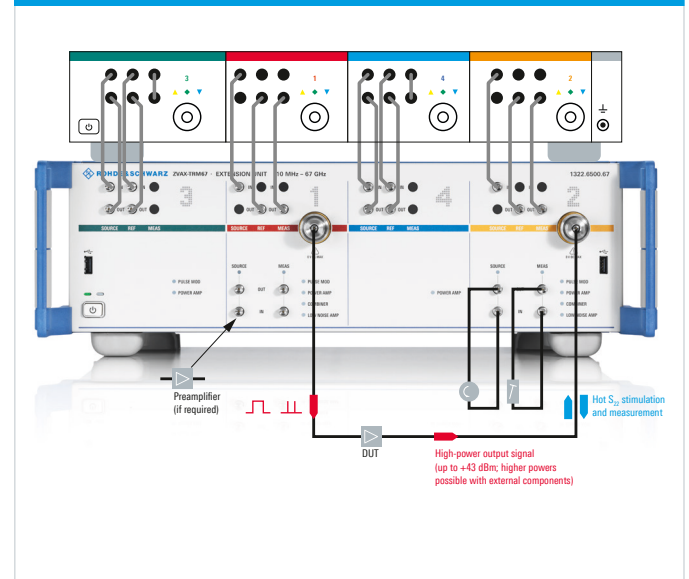
An important test on power amplifiers is the hot S_{22} measurement, which involves determining the output power matching of an amplifier working under load conditions. For this measurement, a stimulus signal is output at R&S®ZVAX-TRM port 1, and the output power matching (S_{22}) is measured at port 2. Depending on the output power level, additional components such as an isolator or attenuator may be required.

The R&S®ZVAX-TRM ports can handle a maximum input power of +43 dBm; higher power levels can be processed by using appropriate external components (isolator, attenuator, etc.).

Measuring a T/R module with a circulator at its input (three ports)



Test setup for high-power and hot S_{22} amplifier measurements



Key specifications

Specifications		
Maximum input power at test port	base unit	+43 dBm ¹⁾
Rise time	R&S®ZVAXxxB712/B73 pulse modulator options	< 10 ns
On/off ratio at 10 GHz		> 60 dB
Pulse droop		typ. 0.05 dB
Trigger delay		< 25 ns
Output power (depending on installed options and R&S®ZVA output power)	with R&S®ZVAXxxB112/B134 output amplifier options	> 5 dBm to 15 dBm
Dynamic range with all options installed	up to 24 GHz	> 120 dB
	up to 40 GHz	> 110 dB
	up to 50 GHz	> 100 dB
	up to 67 GHz	> 90 dB

¹⁾ Higher powers can be provided and handled by using external components, e.g. preamplifier, attenuator, etc.

For data sheet, see PD 3607.0530.22 and www.rohde-schwarz.com

Service options			
Extended Warranty, one year	R&S®WE1		Please contact your local Rohde & Schwarz sales office.
Extended Warranty, two years	R&S®WE2		
Extended Warranty, three years	R&S®WE3		
Extended Warranty, four years	R&S®WE4		
Extended Warranty with Calibration Coverage, one year	R&S®CW1		
Extended Warranty with Calibration Coverage, two years	R&S®CW2		
Extended Warranty with Calibration Coverage, three years	R&S®CW3		
Extended Warranty with Calibration Coverage, four years	R&S®CW4		

Ordering information

Designation	Type	Order No.
Base unit¹⁾		
Unit for installation of R&S®ZVAX24Bxxx options, 10 MHz to 24 GHz, to extend the measurement capabilities of an R&S®ZVA/R&S®ZVT with B16 option	R&S®ZVAX-TRM24	1322.6500.24
Unit for installation of R&S®ZVAX40Bxxx options, 10 MHz to 40 GHz, to extend the measurement capabilities of an R&S®ZVA/R&S®ZVT with B16 option	R&S®ZVAX-TRM40	1322.6500.40
Unit for installation of R&S®ZVAX50Bxxx options, 10 MHz to 50 GHz, to extend the measurement capabilities of an R&S®ZVA/R&S®ZVT with B16 option	R&S®ZVAX-TRM50	1322.6500.50
Unit for installation of R&S®ZVAX67Bxxx options, 10 MHz to 67 GHz, to extend the measurement capabilities of an R&S®ZVA/R&S®ZVT with B16 option	R&S®ZVAX-TRM67	1322.6500.67
Options		
Options for R&S®ZVAX-TRM24		
Pulse modulators for R&S®ZVAX-TRM24, 10 MHz to 24 GHz, to generate pulsed signals at R&S®ZVAX-TRM24 port 1 and port 2	R&S®ZVAX24B712	1322.6969.24
Pulse modulator for R&S®ZVAX-TRM24, 10 MHz to 24 GHz, to generate pulsed signals at network analyzer port 3 or at R&S®ZVAX-TRM24 port 1 (B213 option active)	R&S®ZVAX24B73	1322.6975.24
Output amplifiers for R&S®ZVAX-TRM24, 10 MHz to 24 GHz, for increased output power at R&S®ZVAX-TRM24 port 1 and port 2	R&S®ZVAX24B112	1322.6981.24
Output amplifiers for R&S®ZVAX-TRM24, 10 MHz to 24 GHz, for increased output power at network analyzer port 3 and port 4 or at R&S®ZVAX-TRM24 port 1 and port 2 (B213/B224 option active)	R&S®ZVAX24B134	1322.6998.24
Combiner for R&S®ZVAX-TRM24, 10 MHz to 24 GHz, to generate two-tone signal at R&S®ZVAX-TRM port 1 (SRC 1 + 3)	R&S®ZVAX24B213	1322.7007.24
Combiner for R&S®ZVAX-TRM24, 10 MHz to 24 GHz, to generate two-tone signal at R&S®ZVAX-TRM port 2 (SRC 2 + 4)	R&S®ZVAX24B224	1322.7013.24
Low-noise preamplifier for R&S®ZVAX-TRM24 (port 1 measurement path), 10 MHz to 24 GHz	R&S®ZVAX24B31	1322.7020.24
Low-noise preamplifier for R&S®ZVAX-TRM24 (port 2 measurement path), 10 MHz to 24 GHz	R&S®ZVAX24B32	1322.7036.24
Options for R&S®ZVAX-TRM40		
Pulse modulators for R&S®ZVAX-TRM40, 10 MHz to 40 GHz, to generate pulsed signals at R&S®ZVAX-TRM40 port 1 and port 2	R&S®ZVAX40B712	1322.6969.40
Pulse modulator for R&S®ZVAX-TRM40, 10 MHz to 40 GHz, to generate pulsed signals at network analyzer port 3 or at R&S®ZVAX-TRM40 port 1 (B213 option active)	R&S®ZVAX40B73	1322.6975.40
Output amplifiers for R&S®ZVAX-TRM40, 10 MHz to 40 GHz, for increased output power at R&S®ZVAX-TRM40 port 1 and port 2	R&S®ZVAX40B112	1322.6981.40
Output amplifiers for R&S®ZVAX-TRM40, 10 MHz to 40 GHz, for increased output power at network analyzer port 3 and port 4 or at R&S®ZVAX-TRM40 port 1 and port 2 (B213/B224 option active)	R&S®ZVAX40B134	1322.6998.40
Combiner for R&S®ZVAX-TRM40, 10 MHz to 40 GHz, to generate two-tone signal at R&S®ZVAX-TRM port 1 (SRC 1 + 3)	R&S®ZVAX40B213	1322.7007.40
Combiner for R&S®ZVAX-TRM40, 10 MHz to 40 GHz, to generate two-tone signal at R&S®ZVAX-TRM port 2 (SRC 2 + 4)	R&S®ZVAX40B224	1322.7013.40
Low-noise preamplifier for R&S®ZVAX-TRM40 (port 1 measurement path), 10 MHz to 40 GHz	R&S®ZVAX40B31	1322.7020.40
Low-noise preamplifier for R&S®ZVAX-TRM40 (port 2 measurement path), 10 MHz to 40 GHz	R&S®ZVAX40B32	1322.7036.40
Options for R&S®ZVAX-TRM50		
Pulse modulators for R&S®ZVAX-TRM50, 10 MHz to 50 GHz, to generate pulsed signals at R&S®ZVAX-TRM50 port 1 and port 2	R&S®ZVAX50B712	1322.6969.50
Pulse modulator for R&S®ZVAX-TRM50, 10 MHz to 50 GHz, to generate pulsed signals at network analyzer port 3 or at R&S®ZVAX-TRM50 port 1 (B213 option active)	R&S®ZVAX50B73	1322.6975.50
Output amplifiers for R&S®ZVAX-TRM50, 10 MHz to 50 GHz, for increased output power at R&S®ZVAX-TRM50 port 1 and port 2	R&S®ZVAX50B112	1322.6981.50
Output amplifiers for R&S®ZVAX-TRM50, 10 MHz to 50 GHz, for increased output power at network analyzer port 3 and port 4 or at R&S®ZVAX-TRM50 port 1 and port 2 (B213/B224 option active)	R&S®ZVAX50B134	1322.6998.50
Combiner for R&S®ZVAX-TRM50, 10 MHz to 50 GHz, to generate two-tone signal at R&S®ZVAX-TRM port 1 (SRC 1 + 3)	R&S®ZVAX50B213	1322.7007.50
Combiner for R&S®ZVAX-TRM50, 10 MHz to 50 GHz, to generate two-tone signal at R&S®ZVAX-TRM port 2 (SRC 2 + 4)	R&S®ZVAX50B224	1322.7013.50
Low-noise preamplifier for R&S®ZVAX-TRM50 (port 1 measurement path), 10 MHz to 50 GHz	R&S®ZVAX50B31	1322.7020.50
Low-noise preamplifier for R&S®ZVAX-TRM50 (port 2 measurement path), 10 MHz to 50 GHz	R&S®ZVAX50B32	1322.7036.50

¹⁾ Placeholders in R&S®ZVAX-TRMxx base unit and R&S®ZVAXxxTRMyyy option types: xx = 24/40/50/67, yyy = option type.

Designation	Type	Order No.
Options for R&S®ZVAX-TRM67		
Pulse modulators for R&S®ZVAX TRM67, 10 MHz to 67 GHz ²⁾ , to generate pulsed signals at R&S®ZVAX TRM67 port 1 and port 2	R&S ZVAX67B712	1322.6969.67
Pulse modulator for R&S®ZVAX TRM67, 10 MHz to 67 GHz ²⁾ , to generate pulsed signals at network analyzer port 3 or at R&S®ZVAX TRM67 port 1 (B213 option active)	R&S®ZVAX67B73	1322.6975.67
Output amplifiers for R&S®ZVAX-TRM67, 10 MHz to 67 GHz, for increased output power at R&S®ZVAX-TRM67 port 1 and port 2	R&S®ZVAX67B112	1322.6981.67
Output amplifiers for R&S®ZVAX-TRM67, 10 MHz to 67 GHz, for increased output power at network analyzer port 3 and port 4 or at R&S®ZVAX-TRM port 1 and port 2 (B213/B224 option active)	R&S®ZVAX67B134	1322.6998.67
Combiner for R&S®ZVAX-TRM67, 10 MHz to 67 GHz, to generate two-tone signal at R&S®ZVAX-TRM67 port 1 (SRC 1 + 3)	R&S®ZVAX67B213	1322.7007.67
Combiner for R&S®ZVAX-TRM67, 10 MHz to 67 GHz, to generate two-tone signal at R&S®ZVAX-TRM67 port 2 (SRC 2 + 4)	R&S®ZVAX67B224	1322.7013.67
Low-noise preamplifier for R&S®ZVAX-TRM67, 10 MHz to 50 GHz ³⁾ , port 1 measurement path	R&S®ZVAX50B31	1322.7020.67
Low-noise preamplifier for R&S®ZVAX-TRM67, 10 MHz to 50 GHz ³⁾ , port 2 measurement path	R&S®ZVAX50B32	1322.7036.67
Accessories		
19" Rackmount Kit for R&S®ZVA	R&S®ZZA-611	1096.3302.00
19" Rackmount Kit for R&S®ZVAX-TRMxx (including a set of shortened RF rigid interconnection cables)	R&S®ZZA-ZVAX	1325.1422.xx xx = 24/40/50/67

²⁾ Limited performance above 60 GHz.

³⁾ Operation limited to 50 GHz.

From pre-sale to service. At your doorstep.

The Rohde&Schwarz network in over 70 countries ensures optimum on-site support by highly qualified experts. User risks are reduced to a minimum at all stages of the project:

- ▮ Solution finding/purchase
- ▮ Technical startup/application development/integration
- ▮ Training
- ▮ Operation/calibration/repair



Service that adds value

- ▮ Worldwide
- ▮ Local and personalized
- ▮ Customized and flexible
- ▮ Uncompromising quality
- ▮ Long-term dependability

About Rohde & Schwarz

The Rohde & Schwarz electronics group offers innovative solutions in the following business fields: test and measurement, broadcast and media, secure communications, cybersecurity, radiomonitoring and radiolocation. Founded more than 80 years ago, this independent company has an extensive sales and service network and is present in more than 70 countries. The electronics group is among the world market leaders in its established business fields. The company is headquartered in Munich, Germany. It also has regional headquarters in Singapore and Columbia, Maryland, USA, to manage its operations in these regions.

Sustainable product design

- ▮ Environmental compatibility and eco-footprint
- ▮ Energy efficiency and low emissions
- ▮ Longevity and optimized total cost of ownership

Certified Quality Management
ISO 9001

Certified Environmental Management
ISO 14001

Rohde & Schwarz GmbH & Co. KG

www.rohde-schwarz.com

Regional contact

- ▮ Europe, Africa, Middle East | +49 89 4129 12345
customersupport@rohde-schwarz.com
- ▮ North America | 1 888 TEST RSA (1 888 837 87 72)
customer.support@rsa.rohde-schwarz.com
- ▮ Latin America | +1 410 910 79 88
customersupport.la@rohde-schwarz.com
- ▮ Asia Pacific | +65 65 13 04 88
customersupport.asia@rohde-schwarz.com
- ▮ China | +86 800 810 82 28 | +86 400 650 58 96
customersupport.china@rohde-schwarz.com

R&S® is a registered trademark of Rohde & Schwarz GmbH & Co. KG

Trade names are trademarks of the owners

PD 3607.0530.12 | Version 02.00 | July 2015 (as)

R&S®ZVAX-TRM Extension Unit

Data without tolerance limits is not binding | Subject to change

© 2014 - 2015 Rohde & Schwarz GmbH & Co. KG | 81671 Munich, Germany



3607053012