

R&S®ZN-Z86 | R&S®ZN-Z86X SWITCH MATRIX

Multiport extensions to match your demands



Product Brochure
Version 01.00

ROHDE & SCHWARZ

Make ideas real



AT A GLANCE

The R&S®ZN-Z86 and R&S®ZN-Z86X switch matrices are designed and optimized for use with the R&S®ZNA, R&S®ZNB and R&S®ZNB-T vector network analyzers. They offer a comprehensive, cost-effective total solution for simple to complex measurement tasks on multiport or multiple devices.

The R&S®ZN-Z86 and R&S®ZN-Z86X switch matrices cover frequency ranges up to 26.5 GHz and provide configurable port count expansion options. Other features include full crossbar measurements, hardware triggering, unified and simple operation with the vector network analyzer (VNA) and more.

The switch matrices come with R&S®ZN-Z8X Toolbox software offering additional features for monitoring and controlling the switch matrices.

An assortment of switch matrix accessories is also available for convenient and successful integration. Rohde & Schwarz switch matrices are designed to be robust and reliable to ensure that you are well prepared for any measurements your next task demands.

RF switch matrices from Rohde & Schwarz; top: R&S®ZN-Z86 with R&S®ZN-Z86-B24, R&S®ZN-Z86-B34 and R&S®ZN-Z86-B44 options;
middle: R&S®ZN-Z86X, 12-port model; bottom: R&S®ZN-Z86X, 24-port model



KEY FACTS

- ▶ Two different models:
R&S®ZN-Z86 (2 HU) and R&S®ZN-Z86X (3 HU)

Key facts for R&S®ZN-Z86

- ▶ Frequency range: 100 MHz to 26.5 GHz
- ▶ Basic version extends 2-port VNA to six ports
- ▶ Basic version with R&S®ZN-Z86-B24 option extends 4-port VNA to 12 ports
- ▶ Optional extension to support additional paths up to 24 ports on a single unit
- ▶ Extensible up to 48 ports including full crossbar functionality
- ▶ Fully integrated with multiport solid-state relays
- ▶ Hardware trigger is standard

Key facts for R&S®ZN-Z86X

- ▶ Frequency range: 100 MHz to 26.5 GHz
- ▶ Two models: base unit with 12 ports or 24 ports
- ▶ Usable on 2-port or 4-port VNAs with no additional hardware
- ▶ Independent usage of SP4T and DP6T solid-state relays
- ▶ Fully integrated with multiport solid-state relays
- ▶ Hardware trigger as standard

BENEFITS

Unified operation: set up, optimize and measure
▶ [page 4](#)

Hardware trigger: small but significant
▶ [page 5](#)

Tweak the norm
▶ [page 6](#)

More support. More features. More confidence.
▶ [page 8](#)

Mix to match
▶ [page 9](#)

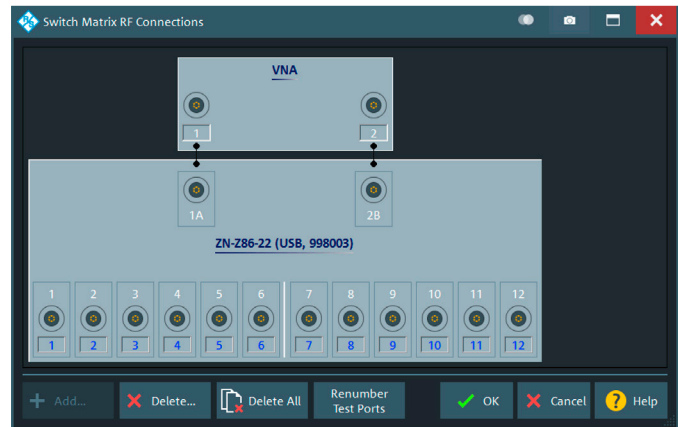
UNIFIED OPERATION: SET UP, OPTIMIZE AND MEASURE

The R&S®ZN-Z86 and R&S®ZN-Z86X switch matrices are simple to operate and the setup is almost effortless when paired with a Rohde & Schwarz vector network analyzer.

The R&S®ZN-Z86 or R&S®ZN-Z86X switch matrix can be connected to the analyzer via USB, LAN or direct control interface. Once a matrix is connected, the analyzer automatically detects the matrix type and allocates the ports.

Where measurement optimization is a concern, a trouble-free selection of "Speed" or "Precision" is available at your fingertips. Once the preferred mode is defined, the analyzer drives the VNA ports automatically during measurement using the "best possible" routes.

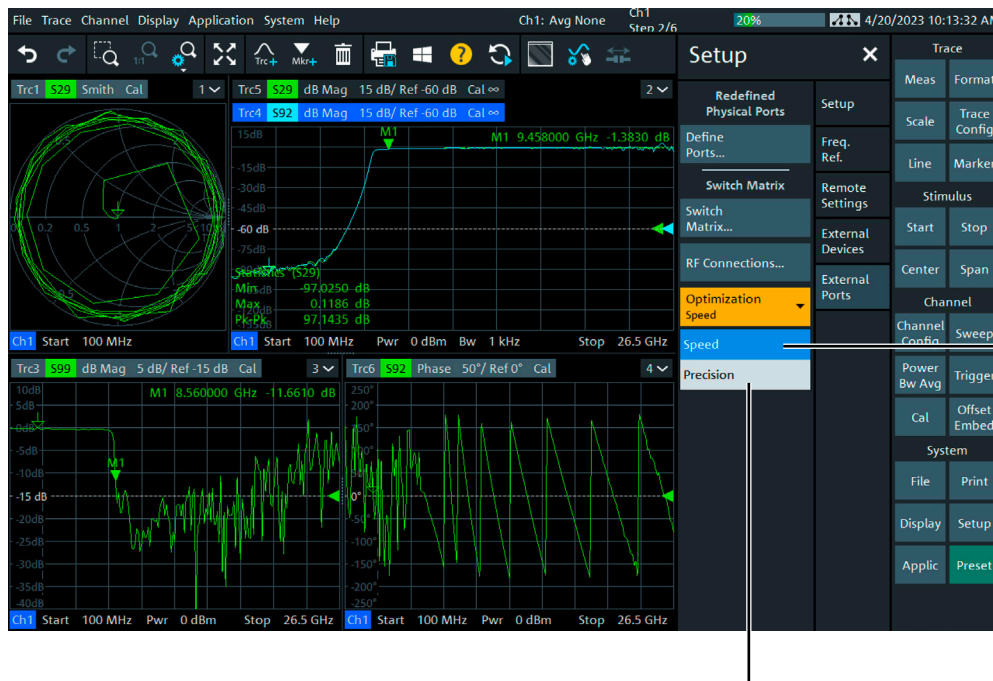
Layout of the measurement results such as S-parameters, wave quantities and wave ratios can be set and edited in line with the user's preference. Measurement results are conveniently displayed at a glance directly on the analyzer's integrated display.



Trouble-free port setup with automatic port detection

Set the VNA to work for speed or precision with a simple selection

Predefined or customized view of measurement results to suit to your needs



Speed optimization

- VNA selects based on the least number of matrix switching procedures
- Speed selection prioritizes measurement speed over attenuation, output power and accuracy

Precision optimization

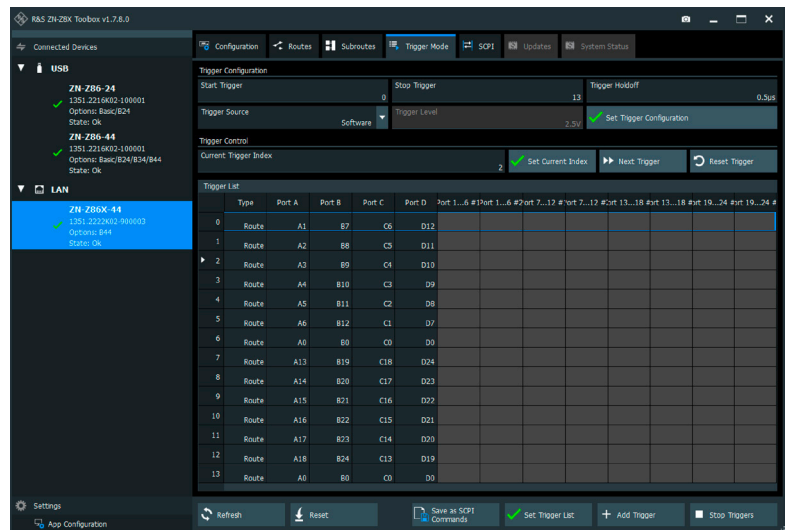
- VNA uses minimum loss paths (i.e. high priority route)
- Precision selection prioritizes measurement accuracy over speed

HARDWARE TRIGGER: SMALL BUT SIGNIFICANT

The R&S®ZN-Z86 and R&S®ZN-Z86X switch matrices offer unique hardware trigger capability as a standard feature.

A hardware trigger minimizes delays, synchronizes devices in real time, and increases measurement throughput using automation. Up to 2048 test sequences can be defined and supported.

Trigger types include control by mouse click via R&S®ZN-Z8X Toolbox software, SCPI commands or an external trigger signal (TTL) via BNC connector.



Convenient trigger setup and operation by mouse click via R&S®ZN-Z8X Toolbox



R&S®ZN-Z86 rear panel equipped with BNC connectors to receive trigger signals from an external device



R&S®ZN-Z86X rear panel equipped with BNC connectors to receive trigger signals from an external device

TWEAK THE NORM

Users can select and adapt an optimal configuration for low insertion loss, maximum accuracy and a high port number with a Rohde & Schwarz VNA and switch matrices.

The R&S®ZN-Z86X with its options mainly includes SP4T and DP6T switches. As a special feature, the R&S®ZN-Z86X switch matrix is usable on 2-port or 4-port VNAs by simply repositioning the RF links on the device front panel.

Another unique feature of the R&S®ZN-Z86X is that it allows users to utilize the SP4T and DP6T relays independently. This not only reduces insertion loss but it also means that additional components, such as attenuators, amplifiers and/or couplers, can be inserted into the measurement setup to enable more advanced applications.

In a mixed configuration setup combining a 4-port VNA and a two-input switch matrix, two of the VNA ports are used as regular test ports for low insertion loss, maximum output power and maximum accuracy, while the other two ports are used with a two-input switch matrix to enable switching between multiple DUTs or multiport DUTs.



Measurement setup using two fully equipped switch matrices with 48 test ports

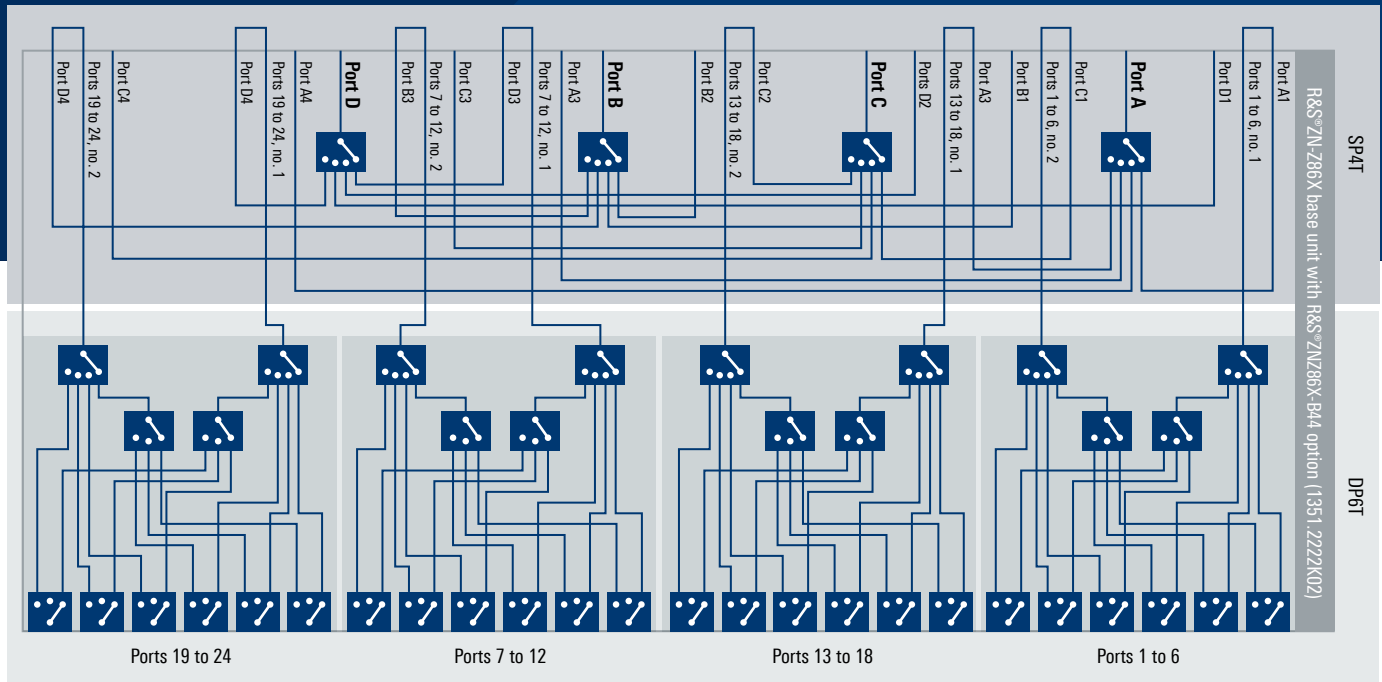
Easy switching between a 2-port and a 4-port VNA

You can easily switch between a 2-port and a 4-port VNA by simply repositioning the RF links on the front panel (R&S®ZN-Z86X with R&S®ZN-Z86X-B24 option, 12-port model)



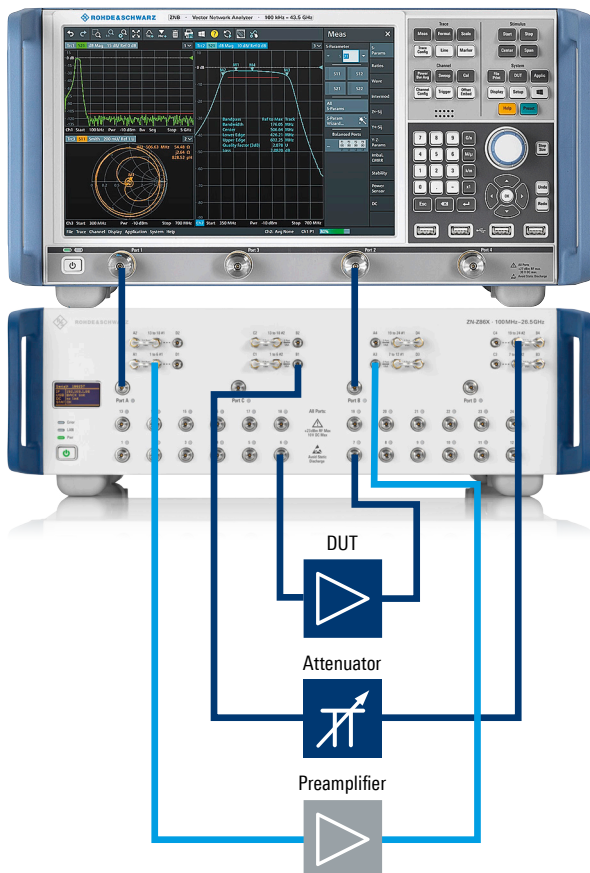
Block diagram of the R&S®ZN-Z86X with the R&S®ZNZ86X-B44 option, 24-port model

Configurable as a full crossbar switch matrix or using its distinct sub-routes; i.e. SP4T or DP6T

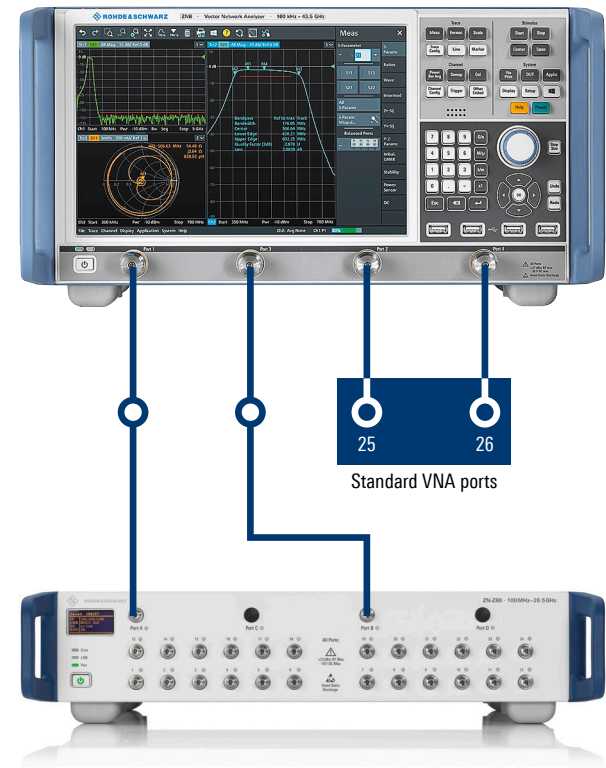


Measurement setup with a VNA and the R&S®ZN-Z86X

Additional components (e.g. attenuator, preamplifier) can be inserted into the setup for special DUT demands



Mixed configuration with matrix and standard VNA ports



MORE SUPPORT. MORE FEATURES. MORE CONFIDENCE.

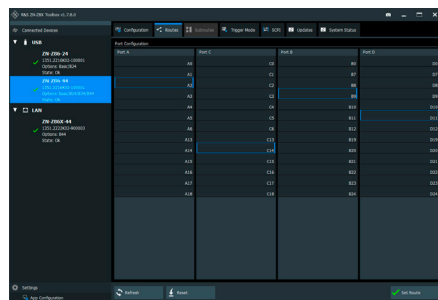
The R&S®ZN-Z8X Toolbox software offers additional features.

Monitoring, troubleshooting and maintenance are a part of daily tasks, which is why the R&S®ZN-Z8X Toolbox software offers additional features to monitor and control the switch matrices, so you can spend less time worrying and more time working on your tasks.

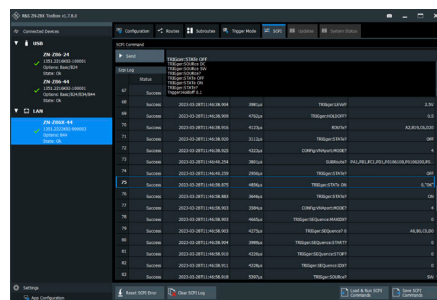
While most measurement requirements are already available through the direct user interface of the VNA, the R&S®ZN-Z8X Toolbox software gives you even more options. It enables standalone operation, helps with troubleshooting and provides aids to monitor the switching status.



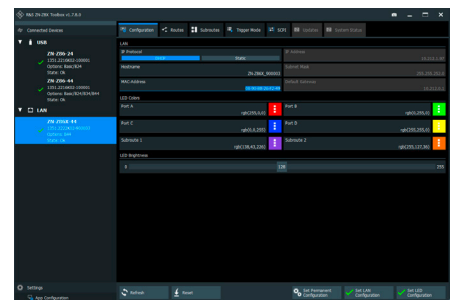
R&S®ZN-Z8X Toolbox software operated on a LAN/USB-connected desktop, laptop or tablet running a Windows operating system



Simple switching control of sub-routes at the click of a mouse



Command and control using SCPI, including switch matrix feedback logs



All-in-one convenient switch matrix management with the R&S®ZN-Z8X Toolbox software

MIX TO MATCH

Select from full crossbar to configurable multiplexing or simple switching to match your desired requirements while keeping your investment lean.

Rohde & Schwarz offers a wide range of versatile, high-performance vector network analyzers and multiport switching solutions, such as the R&S®ZN-Z8x switch matrices and the R&S®OSP open switch and control platform.

Left: R&S®OSP open switch and control unit; right: R&S®ZN-Z84, R&S®ZN-Z85, R&S®ZN-Z86 and R&S®ZN-Z86X switch matrices



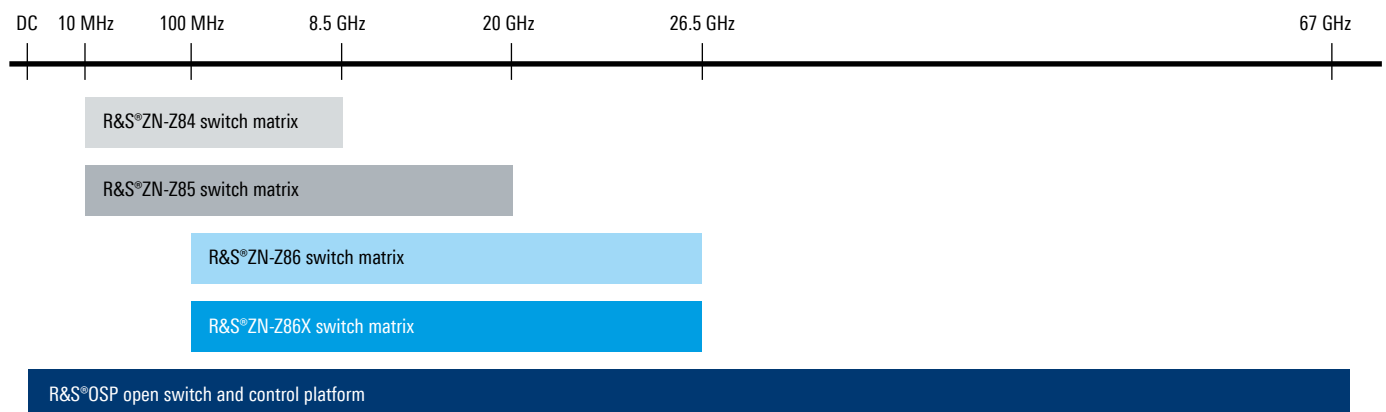
Find your optimal solution from a wide selection of switching solutions and VNAs from Rohde & Schwarz

Device	Frequency range	Relay type	Port options	Supported VNAs
R&S®ZN-Z84 switch matrix	10 MHz to 8.5 GHz	SSR	6, 12, 18, 24, 48 ¹⁾	R&S®ZNA, R&S®ZNB, R&S®ZNBT, R&S®ZND
R&S®ZN-Z85 switch matrix	10 MHz to 20 GHz	SSR	6, 12	R&S®ZNA, R&S®ZNB, R&S®ZNBT
R&S®ZN-Z86 switch matrix	100 MHz to 26.5 GHz	SSR	6, 12, 18, 24, 48 ²⁾	R&S®ZNA, R&S®ZNB, R&S®ZNBT
R&S®ZN-Z86X switch matrix	100 MHz to 26.5 GHz	SSR	12, 24	R&S®ZNA, R&S®ZNB, R&S®ZNBT
R&S®OSP open switch and control platform	DC to 67 GHz	SSR/EMR	configurable	R&S®ZNA, R&S®ZNB

¹⁾ The 48-port option requires two R&S®ZN-Z84 base units equipped with full options (i.e. R&S®ZN-Z84-B22, R&S®ZN-Z84-B32 and R&S®ZN-Z84-B42).

²⁾ The 48-port option requires two R&S®ZN-Z86 base units equipped with full options (i.e. R&S®ZN-Z86-B22, R&S®ZN-Z86-B32 and R&S®ZN-Z86-B42).

Frequency ranges of Rohde & Schwarz switching solutions



ORDERING INFORMATION

Designation	Type	Order No.
Base units (including supplied accessories such as power cable and manual)		
Switch matrix, 26.5 GHz, 2 VNA ports to 6 test ports	R&S®ZN-Z86	1351.2216.02
Switch matrix, 26.5 GHz, with additional RF access	R&S®ZN-Z86X	1351.2222.02
Options for R&S®ZN-Z86 (prerequisite: R&S®ZN-Z86 base unit)		
Additional test ports 7 to 12, 2 VNA ports to 12 test ports	R&S®ZN-Z86-B22	1351.2900.22
Additional test ports 13 to 18, 2 VNA ports to 18 test ports ¹⁾	R&S®ZN-Z86-B32	1351.2900.32
Additional test ports 19 to 24, 2 VNA ports to 24 test ports ²⁾	R&S®ZN-Z86-B42	1351.2900.42
Additional test ports 7 to 12, 4 VNA ports to 12 test ports	R&S®ZN-Z86-B24	1351.2900.24
Additional test ports 13 to 18, 4 VNA ports to 18 test ports ³⁾	R&S®ZN-Z86-B34	1351.2900.34
Additional test ports 19 to 24, 4 VNA ports to 24 test ports ⁴⁾	R&S®ZN-Z86-B44	1351.2900.44
Options for R&S®ZN-Z86X (prerequisite: R&S®ZN-Z86X base unit)		
Additional test ports 1 to 12, 2 or 4 VNA ports	R&S®ZN-Z86X-B24	1351.2222.24
Additional test ports 1 to 24, 2 or 4 VNA ports	R&S®ZN-Z86X-B44	1351.2222.44
RF cable sets		
Semi-rigid cable set for R&S®ZNA, 2.92 mm (f) to 2.92 mm (m), 2 or 4 R&S®ZNA ports to R&S®ZN-Z86, benchtop operation	R&S®ZN-ZA26	1328.8905.02
Semi-rigid cable set for R&S®ZNA, 2.92 mm (f) to 2.92 mm (m), 2 or 4 R&S®ZNA ports to R&S®ZN-Z86X, benchtop operation	R&S®ZN-ZA26	1328.8905.03
Semi-rigid cable set for R&S®ZNB, 2.92 mm (f) to 2.92 mm (m), 2 or 4 R&S®ZNB ports to R&S®ZN-Z86, benchtop operation	R&S®ZN-ZB26	1328.8911.02
Semi-rigid cable set for R&S®ZNB, 2.92 mm (f) to 2.92 mm (m), 2 or 4 R&S®ZNB ports to R&S®ZN-Z86X, benchtop operation	R&S®ZN-ZB26	1328.8911.03
Semi-rigid cable set for R&S®ZNB, 2.92 mm (f) to 2.92 mm (m), 4 R&S®ZNB ports to 2 units of R&S®ZN-Z86, benchtop operation	R&S®ZN-ZB26	1328.8911.05
Semi-rigid cable set for R&S®ZNBT, 2.92 mm (f) to 2.92 mm (m), R&S®ZNBT port 1/2/3/4 to R&S®ZN-Z86	R&S®ZN-ZT26	1328.8928.02
Semi-rigid cable set for R&S®ZNBT, 2.92 mm (f) to 2.92 mm (m), R&S®ZNBT port 1/2/3/4 to R&S®ZN-Z86X	R&S®ZN-ZT26	1328.8928.03
Control cable		
Direct control cable	R&S®ZN-B121	1323.9290.00
Mechanical extensions for usage with R&S®ZNA or R&S®ZNBT vector network analyzer		
Mechanical matrix extension, 2 HU, for R&S®ZN-Z86, benchtop operation	R&S®ZN-ZTBE	1351.3906.02
Mechanical matrix extension, 3 HU, for R&S®ZN-Z86X, benchtop operation	R&S®ZN-ZTXBE	1351.3906.03
Rack adapter		
19" rack adapter for R&S®ZN-Z86	R&S®ZZA-KNP21	1177.8803.00
19" rack adapter for R&S®ZN-Z86X	R&S®ZZA-KNP31	1177.8810.00
Tools		
Torque wrench, SMA/PC 3.5/PC 2.92, 90 Ncm	R&S®ZN-ZTW	1328.8534.35
8 mm wrench extension for close connectors	R&S®SMA-WRENCH	1528.1590.02

¹⁾ Requires R&S®ZN-Z86-B22.

²⁾ Requires R&S®ZN-Z86-B32.

³⁾ Requires R&S®ZN-Z86-B24.

⁴⁾ Requires R&S®ZN-Z86-B34.

Warranty

Base unit	3 years
All other items ¹⁾	1 year

Service options

Extended warranty, one year	R&S®WE1	Contact your local Rohde & Schwarz sales office for more information.
Extended warranty, two years	R&S®WE2	
Extended warranty with calibration coverage, one year	R&S®CW1	
Extended warranty with calibration coverage, two years	R&S®CW2	
Extended warranty with accredited calibration coverage, one year	R&S®AW1	
Extended warranty with accredited calibration coverage, two years	R&S®AW2	

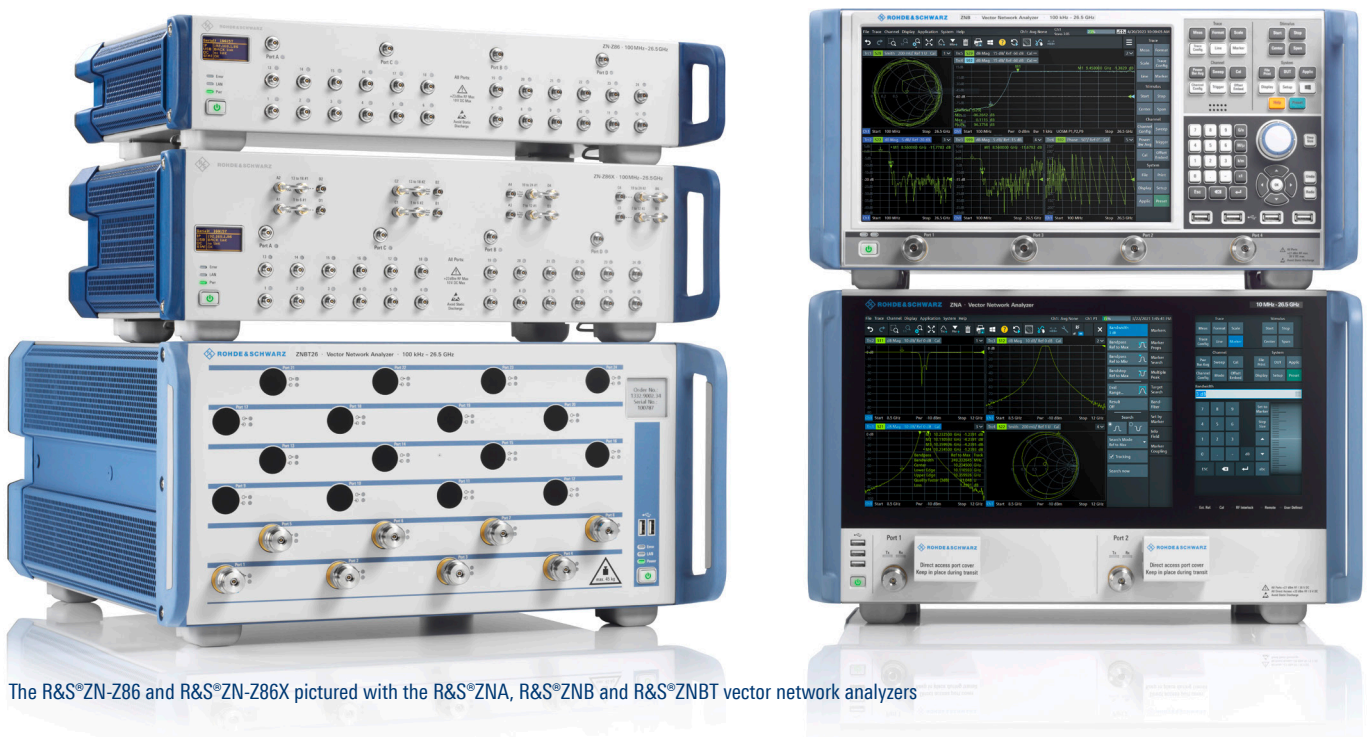
¹⁾ For options installed, the remaining base unit warranty applies if longer than 1 year. Exception: all batteries have a 1 year warranty.

Your local Rohde & Schwarz expert will help find the best solution for you.

To find your nearest Rohde & Schwarz representative, visit www.sales.rohde-schwarz.com

For more information on the full portfolio of switching solutions, visit

www.rohde-schwarz.com/products/rs-zn-z8x-switch-matrix_63493-41857.html



The R&S®ZN-Z86 and R&S®ZN-Z86X pictured with the R&S®ZNA, R&S®ZNB and R&S®ZNBT vector network analyzers

Service at Rohde & Schwarz You're in great hands

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

Rohde & Schwarz

The Rohde & Schwarz technology group is among the trailblazers when it comes to paving the way for a safer and connected world with its leading solutions in test & measurement, technology systems and networks & cybersecurity. Founded more than 85 years ago, the group is a reliable partner for industry and government customers around the globe. The independent company is headquartered in Munich, Germany and has an extensive sales and service network with locations in more than 70 countries.

www.rohde-schwarz.com

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 training

www.training.rohde-schwarz.com

Rohde & Schwarz customer support

www.rohde-schwarz.com/support

