

ROHDE & SCHWARZ

ZVA40

The Rohde & Schwarz ZVA40 is a high-performance vector network analyzer (VNA) in the ZVA Family, designed for demanding RF and microwave measurements up to 40 GHz. It offers exceptional measurement speed, wide dynamic range, and high flexibility for active and passive component testing.

SPECIFICATIONS

General

Interfaces	LAN (10/100/1000 Base-T), GPIB (IEEE 488.2), USB (2x front, 4x rear), VGA, DVI-D, Trigger In/Out, Ref In/Out
Display	10.4-inch color TFT active matrix, SVGA (800 x 600 pixels)

Physical

Power Supply	100 V to 240 V AC ($\pm 10\%$), 50 Hz to 60 Hz
Operating Temperature	5 to 40 °C
Dimensions (W×H×D)	435 x 232 x 482 mm
Weight	27 kg

Frequency & Source (Stimulus) Characteristics

Frequency Range	10 MHz to 40 GHz
Number of Ports	2 or 4 (hardware configuration dependent)
Port Connector Type	Ruggedized 2.92 mm (PC 2.92) male, 50 Ω
Frequency Resolution	1 Hz
Frequency Accuracy	$\pm 1 \times 10^{-6}$ (standard)
Power Resolution	0.01 dB
Harmonic Distortion	<-30 dBc (typical at max. output power)
Non-Harmonic Spurious	<-45 dBc (typical at >10 kHz offset)

Receiver Characteristics

Maximum Input Level	+10 dBm
Damage Level	+27 dBm (RF power) / 30 V DC
IF Bandwidth Range	1 Hz to 10 MHz (optional up to 15 MHz)
Amplitude Trace Noise	< 0.005 dB RMS (at 10 kHz IF bandwidth)
Phase Trace Noise	< 0.05° RMS (at 10 kHz IF bandwidth)

Measurement Speed & Points

Measurement Time per Point	< 3.5 μ s (at 1 MHz IF bandwidth, CW mode)
Data Transfer Time (GPIB)	< 2.9 ms for 201 points
Data Transfer Time (VXI11 via LAN)	< 1.5 ms for 201 points
Number of Measurement Points per Sweep	1 to 60,001
Sweep Types	Linear, Logarithmic, Segmented, Power, CW, Time

Measurement Accuracy & Calibration

Calibration Methods Supported	TOSM, TRL, TNA, TRM, UOSM, TOM
Automatic Calibration Unit Compatibility	Compatible with R&S ZV-Z5x series

Triggering & Synchronization

Trigger Sources	Internal, External, Manual, Bus (GPIB, LAN)
Reference Input Frequency	10 MHz (external 1 MHz to 20 MHz in 1 MHz steps accepted)
Reference Output Frequency	10 MHz

Hardware Configuration Options

Direct Receiver Access	Supported via Option R&S ZVA40-B16
Internal Bias Tees	Standard on all ports
Configurable Test Set Option	Available on 4-port model (Option R&S ZVA40-B14)
Internal Attenuator (Receiver)	0 to 35 dB in 5 dB steps (Option R&S ZVA-B31/-B32/-B33/-B34)

Software & Measurement Applications

Time Domain Analysis	Supported (Option R&S ZVAB-K2)
Frequency Conversion Measurements	Supported (Option R&S ZVA-K4)
Pulsed RF Measurements	Supported (Option R&S ZVA-K7 / R&S ZVAB-K7)
Noise Figure Measurement	Supported (Option R&S ZVAB-K9)
Embedding / De-embedding	Supported standard

Display & User Interface

Display Size	10.4 inches
Display Type	Color TFT active matrix
Display Resolution	SVGA (800 x 600 pixels)
Number of Display Channels	> 100
Number of Traces per Channel	> 100
Markers per Trace	10

Connectivity & Remote Control

LAN Port	2x RJ-45 (10/100/1000 Base-T)
GPIB Interface	IEEE 488.2 compatible
USB Front Ports	2x USB Type A
USB Rear Ports	4x USB Type A
External Monitor Outputs	1x VGA, 1x DVI-D
User Port	25-pin D-Sub

Power & Environmental Specifications

AC Supply Voltage Range	100 V to 240 V AC ($\pm 10\%$)
AC Line Frequency	50 Hz to 60 Hz ($\pm 5\%$)
Power Consumption (Typical, 2-Port)	250 W
Power Consumption (Maximum, 2-Port)	450 W
Power Consumption (Maximum, 4-Port)	550 W
Operating Temperature Range	+5 °C to +40 °C
Storage Temperature Range	-40 °C to +70 °C

Physical Characteristics

Width	435 mm (approx. 461 mm with handles)
Height	232 mm (approx. 240 mm with feet)
Depth	482 mm (approx. 563 mm with handles and feet)
Rackmount Form Factor	19-inch standard rack compatible (5U height)

Hardware Specifications

Test Port Impedance	50 Ω
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Reference Frequency

Standard Reference Oscillator Aging	1×10^{-6} per year
Standard Reference Oscillator Temperature Stability	1×10^{-6} (within +5 °C to +40 °C)
Precision Reference (Option B4) Aging	1×10^{-7} per year
Precision Reference (Option B4) Temperature Stability	5×10^{-9} (within +5 °C to +40 °C)
Reference Input Level Range	-3 dBm to +20 dBm

Hardware Options

Generator Attenuation Range	0 dB to 70 dB in 10 dB steps (with options R&S ZVA-B21 to R&S ZVA-B24)
Receiver Attenuation Range	0 dB to 35 dB in 5 dB steps (with options R&S ZVA-B31 to R&S ZVA-B34)

Triggering

External Trigger Delay Range	0 s to 100 s
External Trigger Delay Resolution	10 ns

Compliance & Safety

EMC Compliance	IEC/EN 61326-1 Class A, EN 55011 Class A
Safety Compliance	IEC/EN 61010-1

Internal Bias Tees

Maximum Bias Tee DC Voltage	30 V
Maximum Bias Tee DC Current	200 mA

RF Connections

Test Port Gender	Male
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RF Performance

Maximum Generator Output Power (10 MHz to 24 GHz)	+10 dBm (+15 dBm typ.)
Maximum Generator Output Power (24 GHz to 40 GHz)	+6 dBm (+13 dBm typ.)

Rear Panel Connections

Reference Input Connector Type	BNC female
Reference Output Connector Type	BNC female
External Trigger Input Connector Type	BNC female
External Trigger Output Connector Type	BNC female

TECHNOLOGY

Vector Network Analysis

APPLICATIONS

RF and microwave device testing, active and passive component characterization, mixer measurements, pulsed RF analysis

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