R&S®ENV4200
200 A Four-Line V-Network
RFI voltage measurements at high currents

ROHDE&SCHWARZ

Product Brochure | Version 01.00

R&S®ENV4200 200 A Four-Line V-Network

At a glance

The R&S®ENV4200 200 A four-line V-network meets the requirements of CISPR 16-1-2, EN 55016-1-2, ANSI C63.4 and FCC Part 15 for V-networks with an impedance of 50 µH || 50 Ω in the frequency range from 150 kHz to 30 MHz. It is used for measuring RFI voltages on AC and DC supply connections of EUTs carrying very high currents. It is based on air-core inductances and contains an artificial hand and a pulse limiter.

The maximum continuous current on all four connectors is typically 100 A with the fans switched off and 200 A with the fans switched on. If the built-in power supply is used and the internal temperature limit of +50 °C is exceeded, the fans automatically switch on. If the upper limit of +150 °C is exceeded, the LED will turn red and a warning tone will be heard. For connection to the supply network and to the EUT, the R&S®ENV4200 V-network comes with an all-insulated connector system from Multi-Contact. Cable sockets with sufficient current-carrying capacity are included.

The permissible AC operating voltage is 400 V (voltage to neutral in a three-phase system). This corresponds to a delta voltage of 690 V. The permissible DC operating voltage is 690 V. The phase of the V-network can be manually selected via a front panel switch or automatically via TTL control inputs that are compatible with the latest Rohde&Schwarz test receivers.

Key facts

- Frequency range from 150 kHz to 30 MHz
- Power-handling capacity up to 200 A, constant current
- Simulated impedance 50 µH || 50 Ω in line with CISPR 16-1-2
- V-network for RFI voltage measurements in line with CISPR, EN, VDE, ANSI and FCC Part 15
- Calibrated in line with CISPR 16-1-2 and ANSI C63.4

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Benefits and key features

Air-core design and artificial hand

The R&S®ENV4200 200 A four-line V-network is based on air-core inductances and contains an artificial hand in order to mimic the influence of the user's hand while measuring the disturbance voltage..

Built-in 10 dB attenuator pad

To ensure standard impedance irrespective of the measuring receiver's input attenuation, the R&S®ENV4200 is equipped with a 10 dB attenuator pad in order to mimic the influence of the user's hand while measuring the disturbance voltage.

Built-in pulse limiter (can be switched off)

A built-in pulse limiter that can be switched off protects the measuring receiver's input.

Automatic temperature monitoring

When the temperature inside the housing reaches about +50 °C, the fans of the R&S®ENV4200 automatically switch on. This protects the V-network in case of a high constant current load.

Remote control with TTL levels (compatible with Rohde&Schwarz measuring receivers)

TTL control inputs that can be driven by controllers or Rohde&Schwarz measuring receivers are provided for remote control of phase selection in an automatic test system.

Specifications

Specifications		
Frequency range		150 kHz to 30 MHz
Simulated impedance		50 µH || 50 Ω
Error limits in line with CISPR 16-1-2	magnitude and phase	±20 % and ±11.5°
Decoupling attenuation between power supply and measuring receiver port in line with CISPR 16-1-2	150 kHz to 30 kHz	> 40 dB
Test path to EUT		
Maximum permissible constant current	N, L1, L2, L3	200 A
Mains voltage	N, L1, L2, L3 (star/delta voltage)	0 V to 400 V/690 V AC + 10 %
DC voltage	N, L1, L2, L3	0 V to 690 V DC + 10 %
Peak current	N, L1, L2, L3	250 A (2 minutes)
Mains frequency		0 Hz to 60 Hz + 5 %
Test path to measuring receiver		
Maximum permissible RF disturbance power from EUT		5 W
Voltage division factor between EUT and measuring receiver port	built-in attenuator pad, calibration data supplied with V-network	10 dB – 0.5 dB/+ 2.5 dB
Response threshold of built-in pulse limiter	can be switched off	140 dB (µV) (nom.)
Power supply for fans and control logic		
Mains voltage	115 V setting	100 V to 120 V AC ± 10 %
	230 V setting	220 V to 240 V AC ± 10 %
Mains frequency		50 Hz to 60 Hz ± 5 %
Power consumption		100 VA (nom.)
Connectors		
Mains and DC voltage output	front panel, N, L1, L2, L3	panel connector (Multicontact)
RF output	front panel, TO TEST RECEIVER	N female, 50 Ω
Artificial hand	front panel	4 mm connector, female
Mains and DC voltage input	rear panel, N, L1, L2, L3	panel connector (Multicontact)
Mains voltage input (auxiliary voltage)	rear panel, POWER FOR FAN AND REMOTE CONTROL	low-temperature connector with mains filter
Remote control input	rear panel, REMOTE CONTROL	25-contact, D-Sub, female
Protective earth	front panel and rear panel	M10 threaded bolt
RF reference ground	on both sides	ground bar with eleven M6 threads
General data		
Operating temperature range		+5 °C to +45 °C
Storage temperature range		–40 °C to +70 °C
Dimensions	W × H × D, overall	446 mm × 325 mm × 595 mm
Weight		39 kg
Electrical safety	observe notes in manual	in line with EN 61010-1
EMC		in line with IEC/EN 61326-1
Emission		class B, in line with residential environment requirements
Immunity		in line with industrial environment requirements

Specifications with limits: Represent warranted product performance by means of a range of values for the specified parameter. These specifications are marked with limiting symbols such as <, ≤, >, ≥, ±, or descriptions such as maximum, limit of, minimum. Compliance is ensured by testing or is derived from the design. Test limits are narrowed by guard bands to take into account measurement uncertainties, drift and aging, if applicable.
Specifications without limits: Represent warranted product performance for the specified parameter. These specifications are not specially marked and represent values with no or negligible deviations from the given value (e.g. dimensions or resolution of a setting parameter). Compliance is ensured by design.
Nominal values (nom.): Characterize product performance by means of a representative value for the given parameter (e.g. nominal impedance). In contrast to typical data, a statistical evaluation does not take place and the parameter is not tested during production.

Ordering information

Designation	Type	Order No.
Base unit		
200 A Four-Line V-Network	R&S®ENV4200	1107.2387.04
Accessories supplied		
▮ Operating manual with calibration data and CD-ROM with service manual and voltage division factor ▮ 2 250 A cable sockets (Multi-Contact), code color: blue ▮ 6 250 A cable sockets (Multi-Contact), code color: black ▮ Power cables for fans and control logic ▮ 11 screws to connect RF reference ground ▮ Spare fuses		
Recommended extras		
Control Cable, length: 3 m [1]	R&S®EZ-21	1107.2087.03
Control Cable, length: 10 m [1]	R&S®EZ-21	1107.2087.10
Control Cable, length: 3 m [2]	R&S®EZ-29	1326.6470.03
Control Cable, length: 10 m [2]	R&S®EZ-29	1326.6470.10
150 kHz Highpass [3]	R&S®EZ-25	1026.7796.03
Test/Calibration Adapter	R&S®EZ-26	1142.8320.02

[1] 25-wire remote control cable for R&S®ESxS, R&S®ESIBx, R&S®ESPIx, R&S®ESCIx and R&S®ESUx test receivers (male-to-male, wired 1:1; two R&S®EZ-21 and a 25-wire filtered feedthrough are required for shielded chambers).

[2] 25-wire to 9-wire remote control cable for R&S®ESLx, R&S®ESRPx, R&S®ESRx and R&S®ESWx test receivers (male-to-male; one R&S®EZ-21, one R&S®EZ-29 and a 25-wire filtered feedthrough required for shielded chambers).

[3] Required for high disturbance voltages below 150 kHz, e.g. for disturbance voltage measurements in line with EN 50065 Part 1.

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	