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R&S® ENV4200 – 200 A Four-Line V-Network

for RFI voltage measurements at high currents

- ◆ Frequency range 150 kHz to 30 MHz
- ◆ V-network in line with CISPR, EN, VDE, ANSI
- ◆ Impedance $50 \mu\text{H}/50 \Omega$ (magnitude and phase) in line with CISPR 16-1-2 Amd. 2: 2006
- ◆ Artificial hand
- ◆ Continuous current up to $4 \times 200 \text{ A}$
- ◆ Air-core design
- ◆ Built-in pulse limiter (can be switched off)
- ◆ Remote control with TTL levels (compatible with Rohde & Schwarz test receivers)
- ◆ Calibrated to CISPR 16-1-2 and ANSI C63.4



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At a glance

The R&S® ENV4200 V-network meets the requirements of CISPR 16-1-2, VDE 0876, and ANSI C 63.4 for V-networks with the impedance in the frequency range 150 kHz to 30 MHz. It is used for measuring RFI voltages on AC supply connections of EUTs carrying very high currents. It is based on air-core inductances and contains an artificial hand.

Explanation

CISPR 16-1-2 specifies two types of V-networks for the frequency range 150 kHz to 30 MHz. They have the following impedance:

- ◆ $50 \mu\text{H} / 50 \Omega$ (type 1)
- ◆ $(50 \mu\text{H} + 5 \Omega) / 50 \Omega$ (type 2)

Type 2 is also suitable for the frequency range 9 kHz to 150 kHz, but not for very high currents since it requires an isolating choke of $250 \mu\text{H}$.

The R&S® ENV4200 V-network corresponds to type 1. The maximum attainable current of the V-network is limited by the voltage drop at the standardized inductances (CISPR 16-1-2 limits the voltage drop to 5% of the AC supply voltage) and by unavoidable heat losses.

Operation

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 $+50^\circ\text{C}$ is exceeded, the fans are automatically switched on. If the upper limit of $+150^\circ\text{C}$ is exceeded, the LED will turn red and a warning tone will be heard.

For connection to the AC supply network and to the EUT, the R&S® ENV4200 V-network is provided with all-insulated female connectors from Multicontact for accommodating the corresponding male connectors for sufficient current-carrying capacity.

The permissible operating voltage is 400 V (voltage to neutral in a three-phase system). This corresponds to a delta voltage of 690 V.

The phase of the V-network can be manually selected by means of a front-panel switch or automatically via TTL control inputs which are compatible with the latest Rohde & Schwarz test receivers. Commercial standard cables (wired 1:1) with 25-pin Cannon connectors can be used as control cables for Rohde & Schwarz test receivers of the following types: R&S® ESxS (R&S® ESHS, R&S® ESS, R&S® ESPC, R&S® ESCS, R&S® ESIB, R&S® ESCI and R&S® ESU).



Front view of the R&S® ENV4200

Specifications

Frequency range	150 kHz to 30 MHz
Simulating impedance (magnitude and phase)	50 μ H//50 Ω
Max. permissible errors (in line with CISPR 16-1-2)	$\pm 20\%$ (magnitude) and $\pm 11.5^\circ$ (phase)
Test path (to EUT)	
Max. permissible continuous current	4 \times 200 A
DC resistance per path	6 m Ω
Mains frequency range	0 Hz to 63 Hz
Max. permissible AC supply voltage	400 V (voltage to neutral; corresponds to 690 V delta voltage in three-phase system)
Test path (to test receiver)	
Pulse limiter	to 150 dB μ V (can be switched off)
Voltage division factor between EUT and test receiver port	10 dB (built-in attenuator pad; calibration data supplied with V-network)
RF load	max. 5 W
Cooling	with 4 built-in fans (manual and automatic operation)
Power supply for cooling and control logic	
AC supply voltage	115/230 V
AC supply frequency	47 Hz to 63 Hz
Power consumption	100 VA, typ. 60 VA
Connectors	
AC supply voltage inputs (test path)	Multicontact female connectors (250 A)
AC supply voltage input for fans and control logic	male device connector with mains filter
EUT connectors	Multicontact female connectors (250 A)
Ground	M10 screw terminal
Reference ground	uninsulated busbars for screwing on connecting lines
RF connector	N female
Remote control	25-pin Cannon female

General data

Operating temperature range	+5 $^\circ$ C to +40 $^\circ$ C
Storage temperature range	-40 $^\circ$ C to +70 $^\circ$ C
Overall dimensions (W \times H \times D)	446 mm \times 325 mm \times 595 mm
Weight	39 kg
Electrical safety	in line with EN 61010-1, observe note in manual
EMC	
Emission	below noise limit
Immunity	in line with industrial environment requirements

Ordering information

Designation	Type	Order No.
200 A Four-Line V-Network 50 μ H//50 Ω	R&S [®] ENV4200	1107.2387.04
Accessories supplied: manual including calibration data, eight 250-A connectors (Multicontact) color: blue, power cable for fans, screws for connection to reference ground, spare fuses		
Recommended extras		
25-wire remote-control cable: control by test receivers of series R&S [®] ESxS, R&S [®] ESIBx, R&S [®] ESPIx, R&S [®] ESCI and R&S [®] ESUx (male-to-male; wired 1:1; 2 required for shielded chambers)		
Control Cable 3 m	R&S [®] EZ-21	1107.2087.03
Control Cable 10 m	R&S [®] EZ-21	1107.2087.10
Test/Calibration Adapter	R&S [®] EZ-26	1142.8320.02



Rear view of the R&S[®] ENV4200



More information at
www.rohde-schwarz.com
(search term: ENV4200)



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