

Measurement Accessories

RF Step Attenuators RSP, RSG, RSH, DPSP, DPS

Brief description

Attenuator sets are two-port networks providing adjustable attenuation and the same constant characteristic impedance at the input and output.

Switching characteristics (RSP, RSG)

During the switch-on routine the attenuators are set to DC and an attenuation of 40 dB. During switchover between two attenuation values it is ensured that there will be no reduction to lower attenuation values. During switching off the maximum attenuation value is always obtained.

Design (RSP, RSG)

RSP and RSG are accommodated in compact 19" cases. The connectors can be refitted from the front to the rear panel. Since the attenuator module is electrically isolated from the unit itself, the attenuator pads have no ground or AC supply connections.

Main features (RSP, RSG)

- Lifetime $>5 \times 10^6$ switching operations per step
- Low input and output reflection coefficient
- Connectors electrically isolated from chassis ground
- High setting accuracy and switching reliability
- Short setting time of 20 ms
- Residual attenuation taken into account
- Frequency-dependent attenuation correction (RSP)
- Programmable via IEC/IEEE bus



RSP (photo 36277)

RF Step Attenuator RSG

Attenuation can be set in 1 dB steps from 0 to 139 dB. The low residual attenuation with 0 dB setting can be determined by means of a special function. The attenuation accuracy can be improved by taking into account the correction values which are displayed on the front panel and can be recalled via IEC/IEEE bus.

Precision Attenuator RSP

RSP provides attenuation values between 0 and 139.9 dB in the frequency range 0 to 2.7 GHz. Above 1 dB, the smallest step is 0.1 dB. RSP can be used as an attenuator pad from 1 dB to 139.9 dB.

RSH

The attenuation of RSH can be set manually from 0 to 139 dB in 10 dB and 1 dB steps. Operation of RSH is purely mechanical and the model is fully independent of any power supply.

DPSP

RF Step Attenuator DPSP allows manual settings with two rotary switches, the carry being executed automatically. For remote control, DPSP has an IEC/IEEE-bus interface and can be used in automatic test systems.

DPSP can be mounted into 19" racks using an adapter. The connectors can be refitted from the front to the rear panel with no change of cables being involved.

DPS

RF Step Attenuator DPS features manual operation and the same electrical characteristics as the programmable DPSP. The desired attenuation is set with decade switches. Built-in batteries, which are charged during AC supply operation, make DPS ideal for all applications where a power cable would be troublesome, eg in servicing and in outdoor measurements.



RSH



DPSP (photo 26970)



DPS (photo 26972)

Measurement Accessories

Specs in brief

	RSG	RSP	RSH	DPSP, DPS
Frequency range	0 to 5.2 GHz	0 to 2.7 GHz	DC to 5.2 GHz	0 to 2.7 GHz
Attenuation range	0 to 139 dB	0 to 139.9 dB	0 to 139 dB	0 to 139 dB
Smallest step	1 dB	0.1 dB (from 1 dB)	1 dB	1 dB
Residual attenuation (0 dB position)	DC ≤0.1 (typ. 0.05) dB ≤1 GHz ≤0.8 (typ. 0.5) dB ≤3 GHz ≤1.2 (typ. 0.8) dB ≤5.2 GHz ≤1.6 (typ. 1.3) dB	DC ≤0.12 (typ. 0.08) dB ≤1 GHz ≤1.2 (typ. 0.8) dB ≤2.7 GHz ≤1.8 (typ. 1.4) dB	DC ≤0.1 dB ≤1 GHz ≤0.7 dB ≤2.7 GHz ≤1 dB ≤5.2 GHz ≤1.6 dB	≤200 MHz ≤0.4 dB ≤1 GHz ≤0.8 dB ≤2.7 GHz ≤1.2 dB
Maximum attenuation error (in dB + % of attenuation value)	≤1 GHz ±(0.2 dB + 1%) ≤3 GHz ±(0.4 dB + 1%) ≤5.2 GHz ±(0.6 dB + 1.3%)	≤1 GHz ±(0.2 dB + 1%) ≤2 GHz ±(0.3 dB + 1%) ≤2.7 GHz ±(0.4 dB + 1%) ≤0.5 GHz ±(0.05 dB + 0.5%) ≤1 GHz ±(0.1 dB + 0.5%) ≤2 GHz ±(0.15 dB + 1%)	≤1 GHz ±(0.2 dB + 1%) ≤2.7 GHz ±(0.4 dB + 1%) ≤5.2 GHz ±(0.6 dB + 1.3%)	±(0.2 dB + 1.3%), max. 1 dB typical: ±(0.1 dB + 0.6%), max. 0.5 dB
Maximum attenuation error with correction			–	–
Correction data stored for each attenuation setting	at 50 MHz intervals	at 50 MHz intervals	–	–
VSWR	≤3.5 GHz ≤1.1 + 0.2 f/GHz ≤5.2 GHz ≤1.8	≤2 GHz ≤1.2 + 0.15 f/GHz ≤2.7 GHz ≤1.5	≤3.5 GHz ≤1.1 + 0.2 f/GHz ≤5.2 GHz ≤1.8	≤1.5 GHz ≤1.1 + 0.2 f/GHz ≤2.7 GHz ≤1.4
Power-handling capacity				
Continuous	1 W	1 W	1 W	1 W
Pulse	200 W/10 μs, max. 150 V	200 W/10 μs, max. 150 V	200 W/10 μs, max. 150 V	200 W/10 μs, max. 150 V
Duty cycle				
Life	>5 x 10 ⁶ switching operations/step	>5 x 10 ⁶ switching operations/step	>1 x 10 ⁶ switching operations	>5 x 10 ⁶ switching operations/step
Switching time	≤20 ms (atten. not corrected)	≤20 ms (atten. not corrected)	–	≤20 ms
Selftest	checking of correction values	checking of correction values	–	
Power supply	100/120/220/240 V ±10%, 47 to 440 Hz	100/120/220/240 V ±10%, 47 to 440 Hz	–	115/125/220/235 V ±10%, 47 to 440 Hz
Dimensions (W x H x D)	435 mm x 103 mm x 359 mm	435 mm x 103 mm x 359 mm	248 mm x 135 mm x 76 mm	241 mm x 110 mm x 234 mm
Weight	5.5 kg	5.5 kg	1.2 kg	3 kg

Ordering information

RF Step Attenuator	1009.4505.02	0831.3515.02	1060.6518.02	DPSP: 0334.6010.02 DPS: 0334.7217.02
Extras				
RSH	1046.2002.02 0358.5414.02	(microwave cable and adapter set (DC to 26.5 GHz), 1 m, adapter for N male connector) (matching Pad RAM (50/75 Ω))		