

KEYSIGHT TECHNOLOGIES (AGILENT HP)

84906L

The Keysight Technologies (formerly Agilent) 84906L is a high-performance coaxial programmable step attenuator designed for precise signal level control up to 40 GHz. Employing high-stability tantalum nitride thin-film attenuation cards on sapphire substrates, it delivers exceptional repeatability, low SWR, and an outstanding switching life of over 5 million cycles per section. Its compact design is optimized for seamless integration into RF/microwave instrumentation and automated test equipment (ATE) systems.

SPECIFICATIONS

General

Interfaces	10-pin socket (programming connector)
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Physical

Power Supply	24 VDC nominal (optional 5 VDC or 15 VDC)
Operating Temperature	0 to +55 °C °C
Dimensions (W×H×D)	132.3 mm × 42.4 mm × 31.0 mm mm
Weight	0.229 kg kg

RF and Microwave Performance

Frequency Range	DC to 40 GHz
Nominal Impedance	50 Ω
Maximum VSWR (DC to 12.4 GHz)	1.3
Maximum VSWR (12.4 to 34 GHz)	1.7
Maximum VSWR (34 to 40 GHz)	1.8
Maximum Insertion Loss (at 0 dB)	0.8 dB + 0.04 dB/GHz (2.4 dB at 40 GHz)
Maximum RF Input Power (Average)	1 W
Maximum RF Input Power (Peak)	100 W (with max 10 μs pulse width)
RF Connector Options	2.4 mm female (Option 004) or 2.4 mm male/female (Option 101)

Attenuation Specifications

Attenuation Range	0 to 90 dB
Attenuation Step Size	10 dB
Attenuation Repeatability	0.03 dB maximum over 5 million cycles
Attenuation Accuracy (DC to 12.4 GHz)	±0.3 dB to ±1.6 dB (step-dependent)
Attenuation Accuracy (12.4 to 34 GHz)	±0.7 dB to ±2.4 dB (step-dependent)
Attenuation Accuracy (34 to 40 GHz)	±1.0 dB to ±3.4 dB (step-dependent)

Electrical Control & Actuation

Actuation Type	Latching solenoid
Switching Speed	20 ms maximum
Switching Current (per Section)	125 mA at 24 V, 325 mA at 5 V, 188 mA at 15 V
Coil Resistance	190 Ω (24 V), 17 Ω (5 V), 80 Ω (15 V)

Environmental & Reliability

Storage Temperature Range	-40 to +75 °C
Switching Life	5 million cycles per section

Ordering Information & Factory Options

Base Model Number	84906L
Coil Voltage Option 011	5 V supply voltage
Coil Voltage Option 015	15 V supply voltage
Coil Voltage Option 024	24 V supply voltage (standard)
Calibration Option UK6	Commercial calibration certificate with test data

Environmental

Operating Altitude	4,570 m (15,000 ft)
Non-Operating Altitude	7,620 m (25,000 ft)
Operating Humidity	95% RH at 40 °C
Operating Shock	10 g, 6 ms, half-sine
Non-operating Shock	500 g, 1.8 ms, half-sine
Operating Vibration	0.21 g grms, 5 to 500 Hz
Non-operating Vibration	2.09 g grms, 5 to 500 Hz

Inputs & Outputs

Standard RF Connector Type	2.4 mm female
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Performance

Attenuator Sections	4 sections (10, 20, 30, 30 dB)
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Interfaces & Drive

Drive Connector	10-pin male DIP connector
Drive Cable Option	Option 101: Ribbon cable with 14-pin DIP plug

Power & Drive

Option 011 Voltage Range	4.5 to 7 V DC (5 V nominal)
Option 015 Voltage Range	12 to 20 V DC (15 V nominal)
Option 024 Voltage Range	20 to 30 V DC (24 V nominal)

TECHNOLOGY

Thin-film tantalum nitride on sapphire substrate

APPLICATIONS

RF & microwave signal level control, instrumentation, automated test equipment (ATE) systems

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