ELVA-1
Millimeter Wave Division

Solid-State Electrical Controlled Attenuators up to 170 GHz

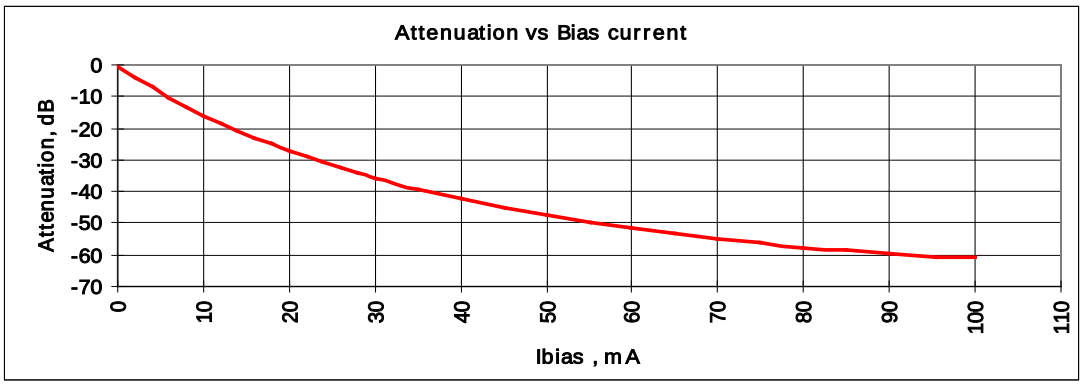
- **Low insertion losses**
- **High isolation**
- **Low cost**
- **Low switching time**
- **Full band operation**
- **Easy to use**

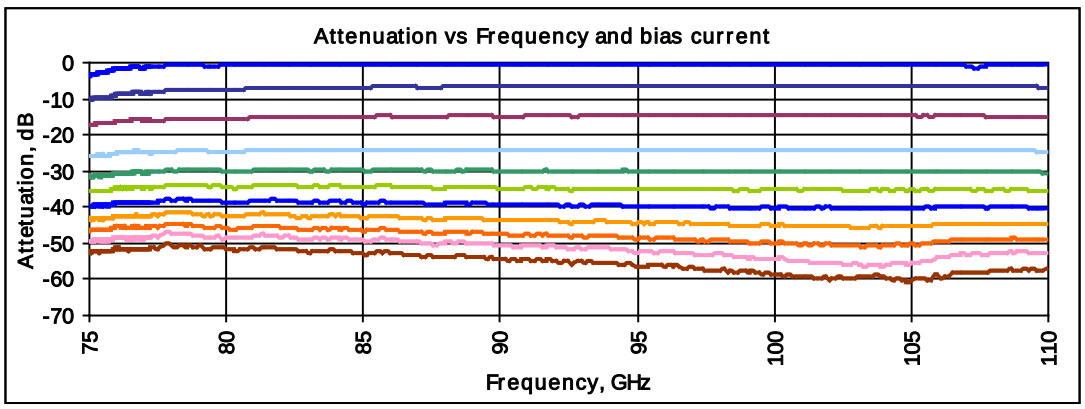
Applications

- Alternative for polarization attenuators
- Alternative for p-i-n modulators
- AM of microwave signals.
- Power control
- Lock-in detection systems

Description

ELVA-1 series Voltage-Controlled Variable Attenuators VCVA are built on the base of PIN diodes as an active element. Modern technology allows combining advantages of different types of attenuators and modulators in one device. Full band operation, accuracy, up to 60dB attenuation range and small insertion losses are comparable with specification for polarization attenuators. On the other hand a small switching time allows to use the device instead Faraday rotation ferrite modulators or ON/OFF type p-i-n modulators. The attenuation value of VCVA is controlled with current. We propose also an external driver which provides a voltage to current conversion and a switching time up to the 25 μsec. Each VCVA attenuator is supplied with individual calibration characteristics. Typical characteristics for the VCVA-10 model are shown in two plots below: attenuation vs. control voltage at fixed frequency and attenuation vs. frequency at different control voltages.





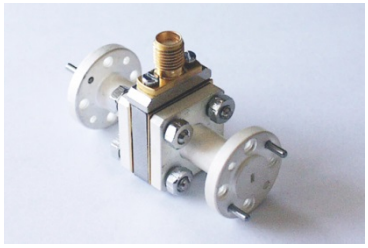
Specifications

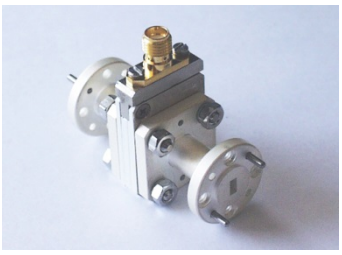
Model	VCVA-28	VCVA-22	VCVA-19	VCVA-15	VCVA-12	VCVA-10	VCVA-08	VCVA-06
Frequency Band	Ka	Q	U	V	E	W	F	D
Range, GHz	26-40	33-50	40-60	50-75	60-90	75-110	90-140	110-170
Waveguide	WR-28	WR-22	WR-19	WR-15	WR-12	WR-10	WR-08	WR-06
Flange	UG-599/U	UG-383/U	UG-383/U-M	UG-385/U	UG-387/U	UG-387/U-M	UG-387/U-M	UG-387/U-M
Isolation*, dB (min)	40	40	40	40	40	40	40	40
DC Bias Input (max), mA	100	100	100	100	100	100	100	100
Peak Power, W(max)	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0
Switching Time, µsec **	50	50	50	50	50	25	25	25
Thickness H* (along axis)**	8.5	17	17	14	13.5	12.5	12	12
Wideband Version								
Bandwidth, %	15	15	15	15	15	15	15	15
Insertion Loss, dB (typ)	1	1	1	1	1	1	2	2
Full band Version								
Bandwidth, %	100	100	100	100	100	100	100	100
Insertion Loss,	1,8	1,8	1,8	2,0	2,0	2,0	2,0	3,0

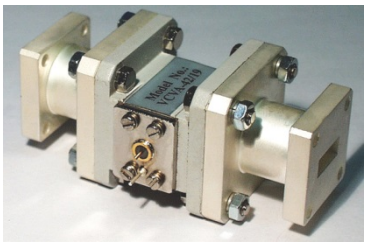
*The models with up to 50-60 dB Isolation are available upon request
**Guaranteed for Rise Time 0-90% RF and Fall Time 100%-10% RF.
*** See outline drawing below

ELVA-1 presents attenuators with flat mount flanges

Optionally: extension waveguides can be connected

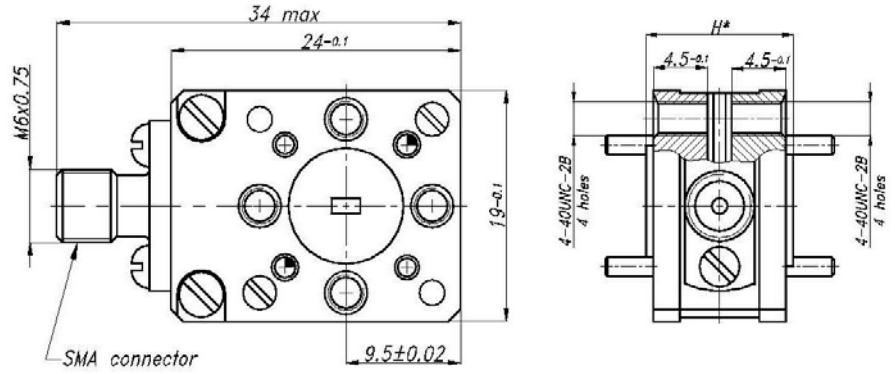




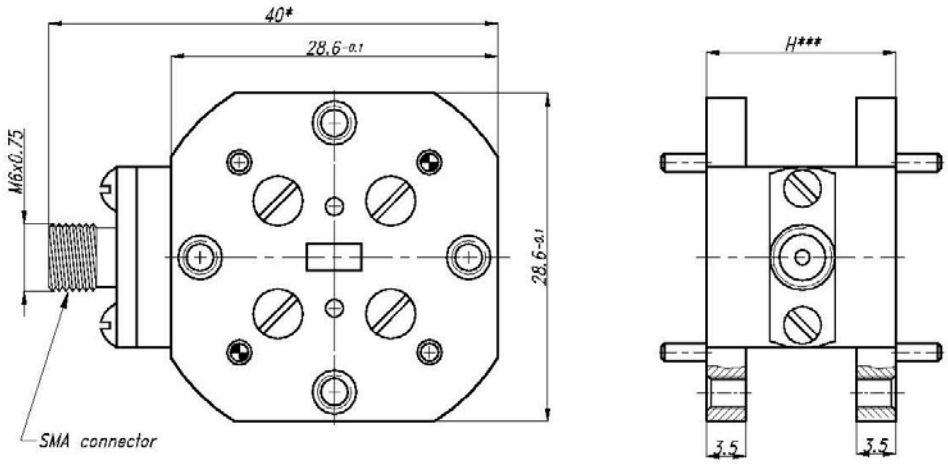


Outline drawings:

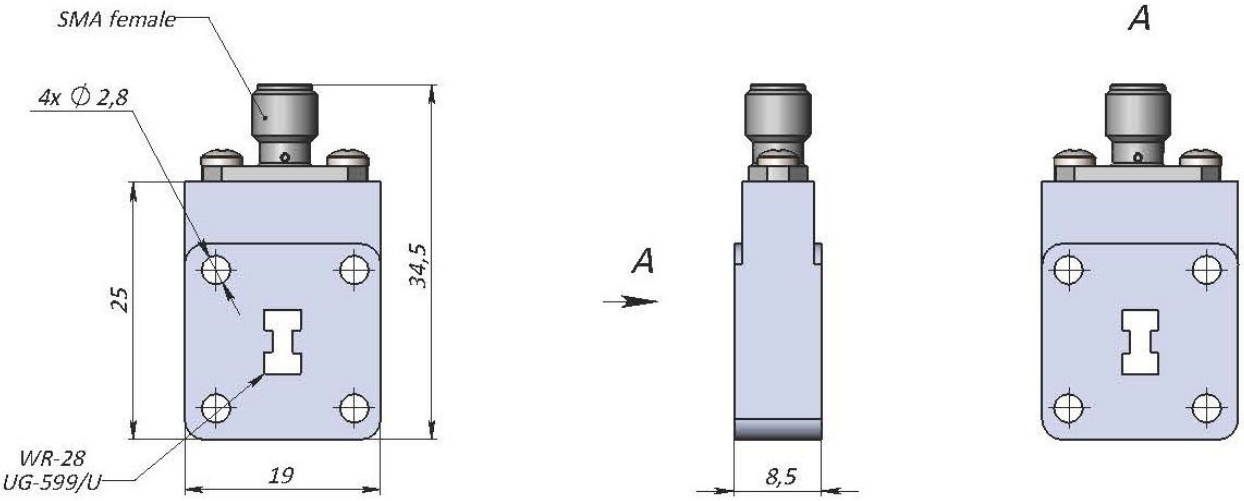
UG-385/U, UG-387/U



UG-383/U



WR-28 UG-599/U



ELVA-1 offers drivers for control of Solid-State electrical controlled attenuators with voltage signal.

- **Analog Linear Driver,** www.elva-1.com e-mail: sales@elva-1.com **Part No. ADL-10/100.**

This deriver converts 0 - +10V input volts to 0 - +100mA biasing current for feeding of attenuator.

Specifications.

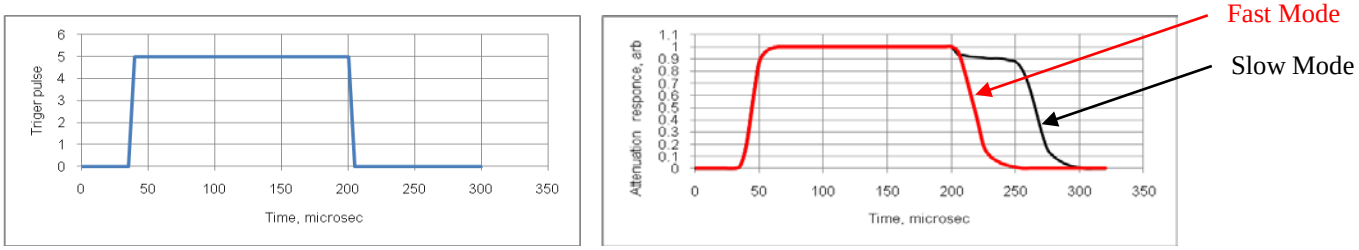
Input signal:	0..+10 V;
Output current:	0…100 mA;
Power supply:	+/-12 VDC 120mA(max);
Control Input/Output connectors:	SMA female.

- **Analog Linear Driver with fast switching mode, Part No. ADLFM-10/100.**

This deriver provides two modes of operation: 'slow mode' and 'fast mode'. In 'slow mode' driver operates as a linear converter voltage to current and provides 0 - +10V input voltage range volts to 0 - +100mA output current. The second mode allows to use VCVA as "on/off" fast modulator. In "fast mode" the driver applies a short negative voltage pulse to accelerate the fall time. Typical Response Function of the attenuation for VCVA is shown on the plot below.

Specifications for 'slow mode'.

Input signal:	0..+10 V;
Output current:	0…100 mA;
Power supply:	+/-12 VDC 120mA(max);
Control Input/Output connectors:	SMA female.



Attenuation response function for 'slow' and 'fast' modes

- **GPIB and RS-232 Driver, Part No. GPDVC-15/100/RS.**

This deriver can operate via GPIB and RS-232 interfaces. User should send 12 bits code for setting desired attenuation. The driver converts sent code to biasing current in range 0-100 mA.

Specification.

Input range:	12 bits;
Output current:	0…100 mA;
Power supply:	100-240V AC;
Control Output connectors:	SMA female.

- **Digital Drivers.**

Upon request Elva-1 can design driver with any digital interface. Please contact with factory.