Digital Attenuators | Signal Generators | RF Switches | Phase Shifters

vaunix

2019 Product Guide

Get set up and running fast with Lab Bricks™.

Lab Bricks are the portable, low-cost, easily programmable RF/microwave test instruments you've been looking for. They're available in a variety of performance levels and bandwidths and come ready-to-go. They'll allow you to set up and conduct a number of wireless network and microwave tests fast, and without the high cost and learning curve of more costly benchtop ATE equipment.

Easy-to-use Software

Lab Bricks are driver-less USB HID compatible devices that you can operate from our intuitive Windows GUI, or by using our library of Windows™ and Linux™ APIs that support Python™, C#, C++, MATLAB™, Java™, LabVIEW™ and many other programming styles.

Review our variety of off-the-shelf solutions, and then visit our website to download data sheets and place your orders. Most models ship in 1 week or less.

Order now at:

www.vaunix.com

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Among our standard Lab Bricks you'll find our unique 4 and 8 port bi-directional attenuators, LDA602Q and LDA906-V8, for your high-speed applications.

Ideal Lab Brick Applications

Engineering/Production Test Labs
MIMO and SIMO Testing
Wireless Fading Simulation
Handover Testing
5G Wireless Research and Development
3G and 4G Wireless Simulation
WiMAX Testing
Automated Test Equipment (ATE)
Portable LO Source
Phased Array Antenna Systems
Phase Modulation
Signal Cancellation
Beamforming

Our Lab Brick line is growing. New models offer higher and wider bands and increased control capabilities.

Digital Attenuators

Models from 6 MHz to 20 GHz starting at $375

LDA series Lab Brick RF and Microwave Programmable Digital Attenuators include 50 Ohm and 75 Ohm bi-directional RF step attenuators with calibrated operation up to 20 GHz. These low cost, portable, hand-held wireless test devices are ideal for engineering and production test laboratories, field testing, and integration into high speed automatic-test-equipment (ATE) systems.

Features

- Powered and controlled through the USB connection
- Programmable fixed or swept attenuation ramps
- Comprehensive Windows and Linux support libraries compatible with most software development environments

Visit vaunix.com/digital-attenuators

RF Switches

SPDT and SP4T Models starting at $399

LSW Series Lab Brick RF and Microwave Programmable Switches offer high isolation, solid-state switching for wireless testing in both single pole double throw (SPDT) and single pole four throw (SP4T) configurations. These low-cost, portable units are powered and controlled via a USB port connection to any PC or powered hub.

Features

- 10 Watt power handling capability
- Manual, internal and external switch control capability
- Comprehensive Windows and Linux support libraries compatible with most software development environments

Visit vaunix.com/digital-rf-switches

Signal Generators

Models from 0.5 MHz to 40 GHz starting at $1,499

LSG, LMS and BLX Series Lab Brick RF and Microwave Programmable Digital Signal Generators offer high output levels and excellent spectral purity through 40 GHz. They can be operated in both continuous-wave (CW) and swept-frequency modes. These low cost, portable, hand-held wireless test devices are ideal for engineering and production test laboratories, field testing, and integration into high speed ATE systems.

Features

- Selectable internal/external 10 MHz reference
- Programmable frequency stepping
- Portable LO Source
- Phase-continuous frequency sweep (LFM)
- High-speed internal and external pulse modulation
- Comprehensive Windows and Linux support libraries for Python, C#, C++, MATLAB, etc.

Visit vaunix.com/digital-rf-signal-generators

Phase Shifters

Models from 2 GHz to 12 GHz starting at $755

Lab Brick LPS Series RF and Microwave Programmable Digital Phase Shifters provide excellent phase accuracy while offering one-degree phase resolution. These low cost, portable, wireless test devices are ideal for engineering and production test laboratories, field testing, and integration into high speed ATE systems.

Features

- 360° phase control in 1° increments
- Phase profile upload capability
- Calibrated performance for optimal accuracy
- Comprehensive Windows and Linux support libraries compatible with most software development environments

Visit vaunix.com/digital-phase-shifters

Digital Attenuators

Model	Frequency (MHz)	Impedance (Ohm)	Ports	Attenuation Range (dB)	Step Size (dB)	Max Input (dBm)	Insertion Loss (dB)	Attenuation Accuracy (Typ.) (dB)	Switching Speed (Typ.)
LDA-102	6 - 1000	50	1	63	0.5	+22	6	1	70 ns
LDA-102E	10 - 1000	50	1	120	0.5	+30	4.5	1.5	4 us
LDA-102-75F	10 - 1000	75	1	95	0.5	+30	5	1	1.5 us
LDA-302P-H	10 - 3000	50	1	31.5	0.5	+33	5	1	2 us
LDA-302P-1	10 - 3000	50	1	63	1	+33	5	1	2 us
LDA-302P-2	10 - 3000	50	1	90	2	+33	5	1	2 us
LDA-602	6 - 6000	50	1	63	0.5	+22	8	1	70 ns
LDA-602E	400 - 6000	50	1	120	0.5	+30	6.5	1.5	4 us
LDA-602EH	200 - 6000	50	1	120	0.1	+28	6.5	0.5	15 us
LDA-906V	200 - 6000	50	1	90	0.1	+28	5	0.25	15 us
LDA-906V-8	200 - 6000	50	8	90	0.1	+28	5	0.25	15 us
LDA-602Q	200 - 6000	50	4	120	0.1	+28	6.5	0.5	15 us
LDA-802EH*	200 - 8000	50	1	120	0.1	+23	6.5	0.5	2 us
LDA-802Q*	200 - 8000	50	4	120	0.1	+23	6.5	0.5	2 us
LDA-802-8*	200 - 8000	50	8	120	0.1	+23	6.5	0.5	2 us
LDA-133	10 - 13000	50	1	63	0.5	+22	10	1	70 ns
LDA-5018V	50 - 18000	50	1	50	0.1	+23	12	1	3 us
LDA-203	1000 - 20000	50	1	63	0.5	+23	13	1.5	100 ns

**Pre-release models. Contact factory for current availability.*

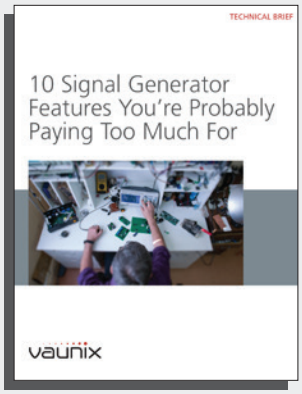
Our new 200 MHz to 6 GHz Attenuator offers high resolution and superior accuracy

The 50-Ohm LDA-906V provides calibrated attenuation across it's full band of 200 MHz to 6 GHz with an impressive step size of 0.1 dB and typical accuracy of < 0.25 dB over the full 90 dB of control range. Capable of bi-directional fixed attenuation or swept attenuation ramps, the LDA-906V is ideal for 5G fading simulation and other WiMAX, MIMO, and SIMO wireless network tests that require continuous, uninterrupted attenuation control.

Signal Generators

Model	Frequency (MHz)	Phase Noise 10/100 kHz offset (dBc/Hz)	Frequency Resolution	Frequency Switching (ms)	Output Power Range (dBm)	Spurious (Typ.) (dBc)	Harmonics (Typ.) (dBc)	Freq. Sweep
LSG-121	20 - 120	-105/-125	100 kHz	10	+10 to -45	-80	-15	Stepped
LSG-251	50 - 250	-105/-125	100 kHz	10	+10 to -45	-80	-15	Stepped
LSG-451	70 - 450	-105/-125	100 kHz	10	+10 to -45	-80	-15	Stepped
LSG-152	250 - 1500	-95/-115	100 kHz	10	+10 to -45	-80	-15	Stepped
LSG-222	500 - 2200	-90/-110	100 kHz	10	+10 to -45	-80	-15	Stepped
LSG-402	1000 - 4000	-85/-105	100 kHz	10	+10 to -45	-80	-15	Stepped
LSG-602	1500 - 6000	-75/-95	100 kHz	10	+10 to -45	-80	-15	Stepped
LMS-271D	0.5 - 260	-98/-105	100 Hz	0.1	+10 to -40	-80	-20	Linear
LMS-451D	70 - 450	-97/-103	100 Hz	0.1	+10 to -45	-80	-20	Linear
LMS-152D	250 - 1500	-95/-101	100 Hz	0.1	+10 to -45	-80	-20	Linear
LMS-232D	500 - 2300	-98/-105	100 Hz	0.1	+10 to -40	-80	-20	Linear
LMS-322D	600 - 3200	-90/-97	100 Hz	0.1	+10 to -45	-80	-20	Linear
LMS-402D	1000 - 4000	-98/-105	100 Hz	0.1	+10 to -40	-80	-20	Linear
LMS-602D	1500 - 6000	-85/-94	100 Hz	0.1	+10 to -40	-80	-20	Linear
LMS-802	4000 - 8000	-81/-89	100 Hz	0.1	+10 to -40	-80	-20	Linear
LMS-802DX	2000 - 8000	-85/-93	100 Hz	0.1	+10 to -70	-80	-40	Linear
LMS-103	5000 - 10000	-81/-89	100 Hz	0.1	+10 to -40	-80	-20	Linear
LMS-123	8000 - 12000	-77/-86	100 Hz	0.1	+10 to -40	-80	-20	Linear
LMS-163	8000 - 16000	-75/-83	100 Hz	0.1	+10 to -30	-80	-20	Linear
LMS-183DX	6000 - 18000	-75/-83	100 Hz	0.1	+10 to -70	-80	-40	Linear
LMS-183CX*	6000 - 18000	-75/-83	100 Hz	0.01	+10 to -70	-60	-40	Linear/Chirp
LMS-203	10000 - 20000	-75/-83	100 Hz	0.1	+10 to -30	-80	-20	Linear
BLX-153*	1 - 15000	-94/-98	100 Hz	5	+10 to -35	-70	-35	Stepped
BLX-403*	500 - 40000	-80/-90	100 Hz	5	+10 to -35	-70	-35	Stepped

**Pre-release models. Contact factory for current availability.*
Customized higher power options of all models are available.
Optional frequency sweep trigger and pulse modulation available on all LMS and BLS models.



Tech Brief Helps Make Portable vs. Benchtop Signal Generator Decision

An evolving method of cost control and RF testing efficiency at-large, is acquiring application specific and self-programmable Lab Bricks vs. feature-rich, preprogrammed, and costly benchtop equipment. Download our Tech Brief to learn where the trade-offs are. www.vaunix.com/updates/resources

RF Switches

Model	Description	Impedance (Ohm)	Insertion Loss (Typ.) (dB)	Isolation (Typ.) (dB)	Pin 0.1 dB Compression (dBm)	Max Input Power (dBm)	Switching Speed (Max.) (nS)	Control Internal	Control External
LSW-102PDT-75F	SPDT, terminated -75 ohm	75	3.5	65	+42	+40	300	GUI, API	TTL
LSW-102P4T-75F	SP4T, terminated -75 ohm	75	3.5	60	+42	+40	300	GUI, API	TTL
LSW-602PDT	SPDT, terminated -50 ohm	50	3.5	65	+42	+40	300	GUI, API	TTL
LSW-602P4T	SP4T, terminated -50 ohm	50	3.5	60	+42	+40	300	GUI, API	TTL
LSW-203PDT*	SPDT, terminated -50 ohm	50	2.0	55	+27	+25	40	GUI, API	TTL

**Pre-release models. Contact factory for current availability.*

Phase Shifters

Model	Frequency (GHz)	Phase Adjustment Range	Phase Adjustment Resolution	Phase Adjustment Accuracy (Typ.)	Programmable Phase Profiles	External Triggering	Response Time (µs)	Insertion Loss (Typ.) (dB)
LPS-202	1 - 2	360°	1°	± 2.5°	User Defined	Optional	10	5
LPS-402	2 - 4	360°	1°	± 2.5°	User Defined	Optional	10	5
LPS-802	4 - 8	360°	1°	± 2.5°	User Defined	Optional	10	6
LPS-123	8 - 12	360°	1°	± 2.5°	User Defined	Optional	10	6

USB Hubs

Model	Number of Ports	Compatibility	Vbus Regulation	Load Current Monitor	Current Measurement Accuracy	Over Current Protection	Operational Temperature	Power
LPH-204B	4	USB 2.0 and 1.1	4.85 to 5.15 VDC (up to 1 amp per port)	Yes	+/-10 mA max.	Yes (1 amp)	-30°C to +55°C	12V - 24W AC/DC wall adapter

Custom ATE Solutions

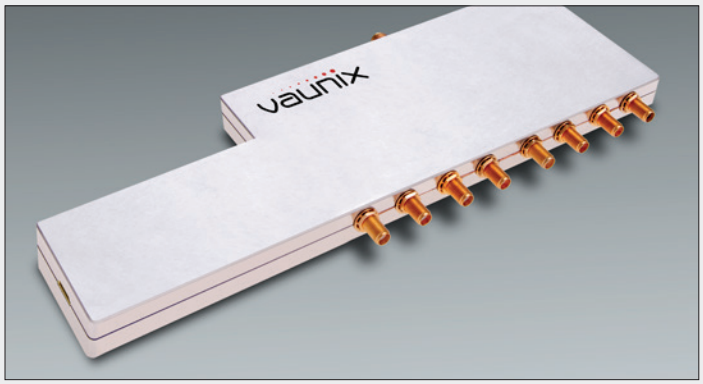
Vaunix's capabilities include custom engineered
Lab Bricks and built-to-spec integrated test systems, like these:

Attenuator Matrices Double as Turnkey Wireless Handover Test Systems

Allow us to design a customized attenuator matrix for your unique wireless handover testing needs. Standard specs include an ultra-fine step size of 0.1 dB and accuracy of < 2.5 dB over 120 dB of control range. They're ideal for making errorless attenuation transitions in ultra-high-speed 5G, WiFi, and PTP networks. Plus, you can easily program them via your choice of USB or Ethernet connection to a PC to create fixed or swept attenuation ramps and various fading profiles.

Signal Generators with 20 MHz per µs Frequency Sweep and Chirp Modulation

We're now offering custom signal generators and synthesizers that support the unique needs of radar and location system applications. These high-performance units provide dependable calibrated power control range of 80 dB and 100 Hz frequency setting resolution. They also offer low harmonic energy and are easily programmed for fixed frequency, linear frequency sweep (unidirectional or bidirectional at rates up to 20 MHz per µs), pulse modulation or chirp modulation.



Splitter/Attenuator Lab Bricks Simplify Radio Fading Simulation

Our customizable Lab Bricks include the new LSA line of power splitter/digital attenuators for frequencies from 6 MHz to 20 GHz. Offering input level tolerance to 2 Watts and step sizes as small as 0.1 dB, they're the ideal integrated Lab Brick for rapid development of radio fading test systems. The LSA-906V-8 splitter/attenuator design, for example, is a 600 MHz to 6 GHz bidirectional, 8-channel device with typical accuracy < 0.25 dB over 90 dB of control range.

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