

LDA-403 Lab Brick® High Resolution Digital Attenuator

0.1 – 40 GHz Frequency | 31.5 dB Attenuation Range | 0.5 Step Size

Features/Benefits

- Reliable and Repeatable solid state digital attenuation
- Includes Windows GUI and SDK, macOS GUI and SDK, Linux SDK, LabVIEW driver, Python examples and more
- Programmable attenuation ramp and fading profiles
- Operate multiple devices directly from a PC or self-powered hub
- Easily portable USB powered device
- USB and Ethernet control interfaces



Applications

- Wi-Fi, Wi-Fi6E, 4G, 5G, LTE, DVB, Microwave Radio Fading Simulators
- Engineering/Production Test Labs
- Automated Test Equipment (ATE)

The Lab Brick LDA series of Digital Attenuators bring affordability, functionality, reliability, and simplicity to the microwave test bench. The LDA products range from 10 MHz to 40 GHz with input level tolerance to 2 Watts and step size as small as 0.1 dB.

The LDA-403 offers both USB and Ethernet interfaces. The USB port uses a native HID interface to avoid the difficulties inherent in using older serial or IEEE-488 interfaces implemented over USB. As a result, Lab Brick users can get to work faster without having to install kernel level drivers, and Lab Brick devices can be easily used on any system that supports USB HID devices, including low-cost embedded computers using Linux or similar operating systems. The Ethernet interface is configurable for Static IP or DHCP with the ability to assign the HTTP port for extra security.

The LDA-403 Digital Attenuator is a bidirectional, 50 Ohm step attenuator. The LDA-403 provides attenuation control from 0.1 to 40 GHz with a step size of 0.5 dB. The attenuators are easily programmable for fixed attenuation, swept attenuation ramps and fading profiles directly from the included Graphical User Interface (GUI) or webUI. Alternatively, Vaunix supplies LabVIEW drivers, Windows API DLL files, macOS DYLIB files, Linux drivers, Python examples, and more for users wishing to develop their own interface. Multiple LDA-403 units can be powered and controlled through a single connection to a PC by linking the expansion bus of the attenuators.

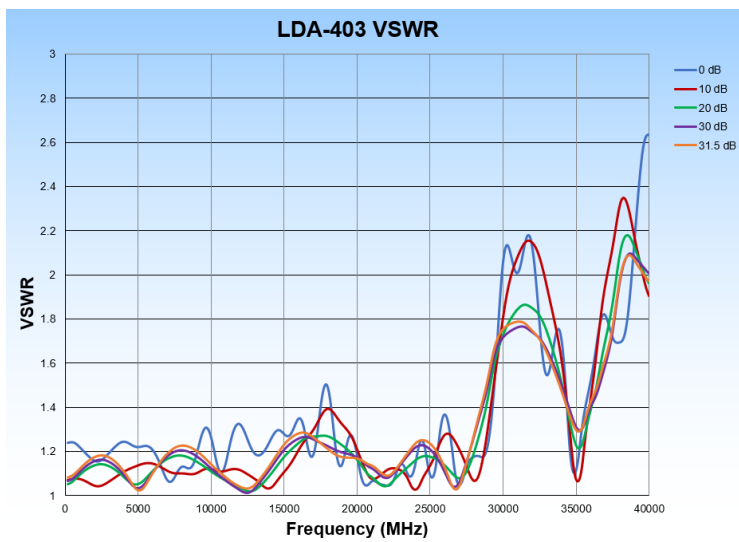
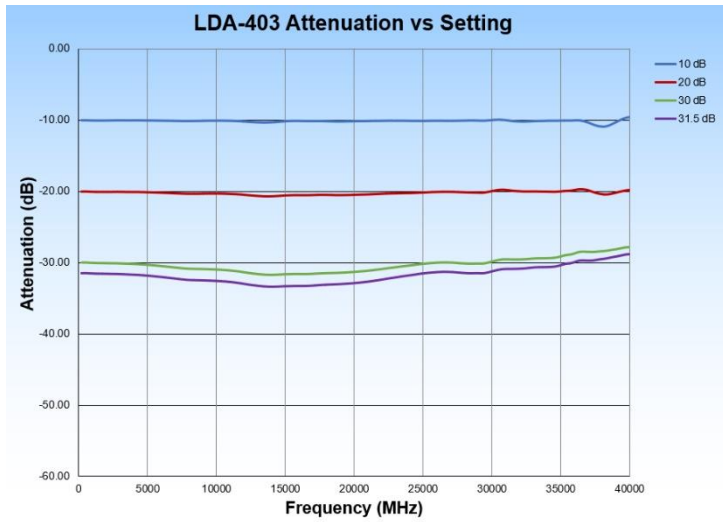
LDA-403 Specifications

Parameter	Test Conditions	Min	Typ	Max
Frequency Range (GHz)		0.1		40
Impedance (Ω)			50	
Attenuation Range (dB)		31.5		
Step Size (dB)		0.5		
Insertion Loss (dB)	< 6 GHz		3	
	< 12 GHz		4	
	< 20 GHz		5	
	< 30 GHz		7	
	< 40 GHz		9.5	
Attenuation Accuracy (dB)	< 6 GHz		1	
	< 12 GHz		1.5	
	< 20 GHz		2	
	< 30 GHz		2	
	< 40 GHz		3	
Switching Speed (ns)	10 - 90% RF		35	
Maximum Input Level (dBm) (Average Power - hot switching)	Port 1		24	
	Port 2		15	
Input IP3 (dBm)			50	
VSWR	< 6 GHz		1.25:1	
	< 12 GHz		1.25:1	
	< 20 GHz		1.5:1	
	< 30 GHz		2.0:1	
	< 40 GHz		2.4:1	

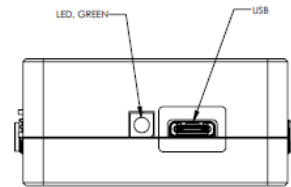
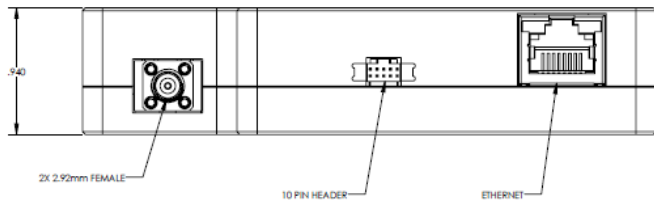
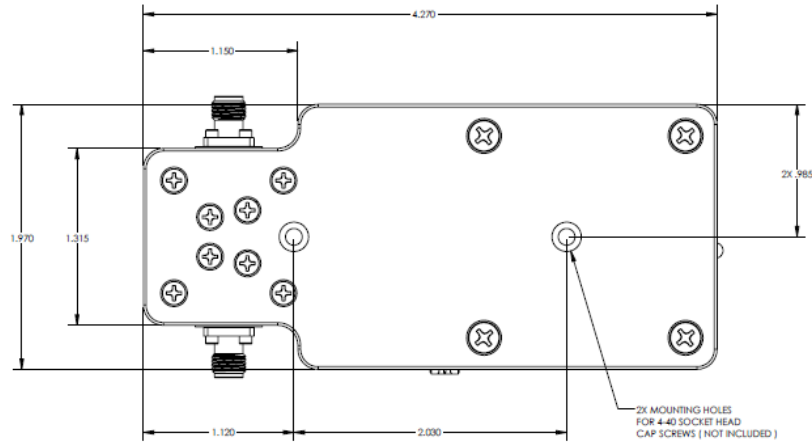
Parameter	Test Conditions/Notes	
Power Requirements	From the USB connection	+5 VDC 100 mA
Environmental	Operating Temperature	-30 °C to +50 °C
	Relative Humidity (non-condensing)	<95%
Physical Connections	Power	USB Type C – female
	Control	USB/Ethernet
	RF Connectors	2.92mm – female
	Expansion Bus	10 pin
Operating Modes	Manual Attenuation Control Swept Attenuation – uni/bi directional – one time/repeat Profile	
Mechanical	Size	4.27 x 1.97 x 0.86 inches 108.5 x 50 x 21.8 millimeters
	Weight	0.4 pounds 182 grams

¹The expansion bus allows the user to link multiple LDA-403 attenuators, providing a single point of power and control to a set of devices. Please contact Vaunix for expansion buss instructions, cable pricing, and availability.

LDA-403 Performance Plots

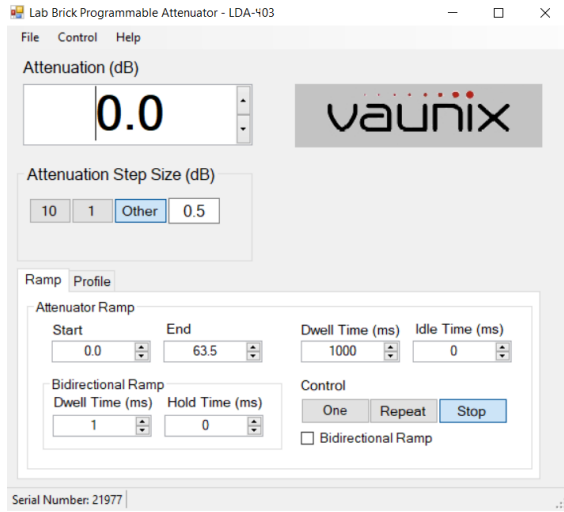


LDA-403 Mechanical Outline



LDA-403 Software Interface

Windows GUI



WebUI

