USB / Ethernet Absorptive Digital Control Attenuator 1GHz-2GHz

Product Description

RFDAT0102G6AUSB is a USB / Ethernet absorptive digital control attenuator with a frequency range of 1 to 2GHz.

The maximum power input of this attenuation is 27dBm. The insertion loss is 1.5dB with a typical attenuation range of 63dB.

The working temperature of this product is between - 40℃ and + 85℃.

Features

- Wide Band Operation 1-2GHz
- USB / Ethernet Controlled and Powered
- 1dB LSB Steps to 63dB

Typical Applications

- Wireless Infrastructure
- Military and Aerospace Applications
- Test Instrumentation
- Radar Systems
- 5G Wireless Communications
- Microwave Radio Systems
- TR Modules
- Research and Development
- Cellular Base Stations

Electrical Specifications (T_A=+25ºC)

Parameter	Min	Typ	Max	Units
Frequency Range		1-2		GHz
Attenuation Range		63		dB
Insertion Loss		2.0	2.5	dB
Insertion Loss Temperature Coefficient		0.01		dB/ °C
Attenuation Flatness: (Referenced to Insertion Loss)		±2		dB
Control Bits		6		Bit
Control Step Size		1		dB
Input VSWR (All Atten. States)		1.4	1.5	: 1
Output VSWR (All Atten. States)		1.4	1.5	: 1
Input 0.1 dB Compression Point (P0.1dB)		25		dBm
RF Input Power			27	dBm
Input IP3		45		dBm
Bias Current		300Typ.		mA
Power Supply		USB(+5.0V)		
Control Interface		USB2.0 & Ethernet(IPv4) (Control Cable Included)		
Weight		0.6 Max.		lbs.
Impedance		50		Ohms
Input / Output Connectors		SMA-Female (Input) – SMA-Female (Output)		
Package		Epoxy Sealed (Standard)		
		Hermetically Sealed (Optional)		

RF-LAMBDA USA LLC: www.rflambda.com
Sales: sales@rflambda.com Technical: support@rflambda.com

Environmental Specifications and Test Standards

Parameter	Description
Operational Temperature	-40ºC to +85ºC (Case Temperature)
Storage Temperature	-50ºC to +105ºC
Thermal Shock	-40ºC → +85ºC (5 Cycles / 10 hours)
*Random Vibration	MIL-STD-202G Table 214-I, Test Condition Letter C 1.5 Hours Per Axis
High Temperature Burn In	Temperature +85ºC for 72 Hours
Shock	1. Weight >20g, 50g half sine wave for 11ms, Speed variation 3.44m/s 2. Weight <=20g, 100g Half sine wave for 6ms, Speed variation 3.75m/s 3. Total 18 times (6 directions, 3 repetitions per direction).
Altitude	Standard: 30,000 Ft (Epoxy Sealed Controlled Environment) Optional: Hermetically Sealed (60,000 ft. 1.0 PSI min)
Hermetically Sealed (Optional)	MIL-STD-883 (For Hermetically Sealed Units)

*For vibration testing details please see additional information section.

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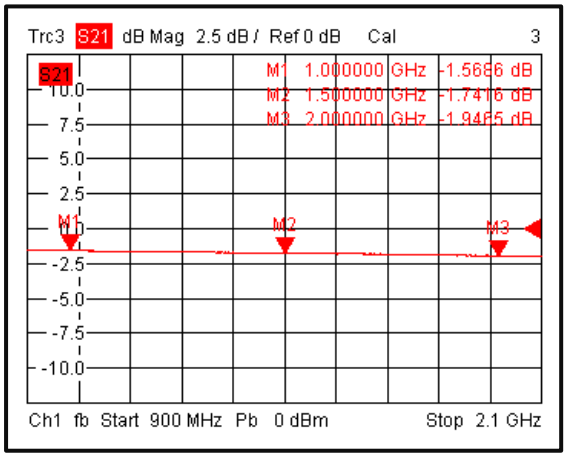
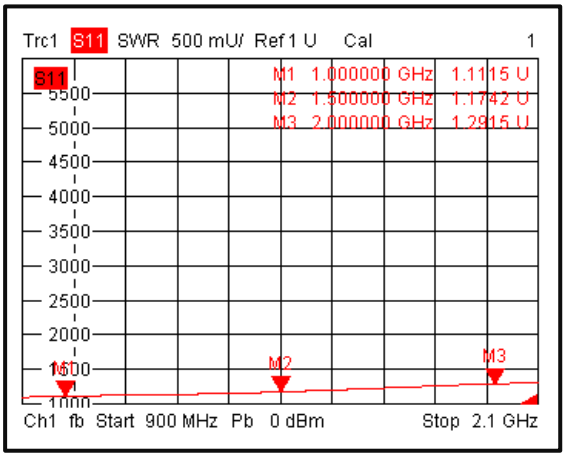
Typical Performance Plots

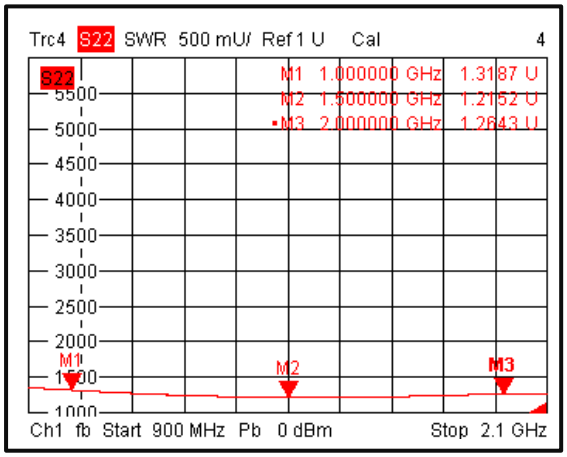
Insertion Loss @+25ºC



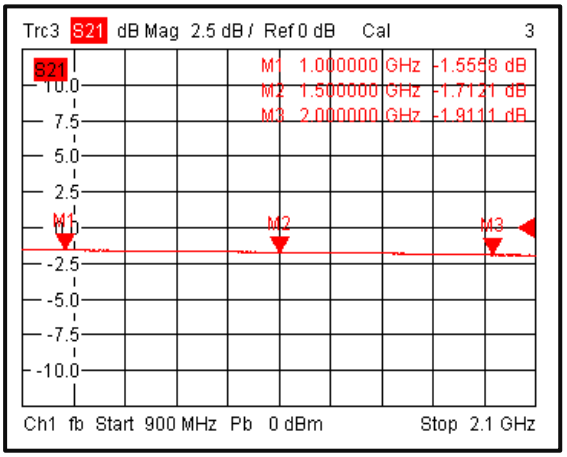
Input VSWR @+25ºC



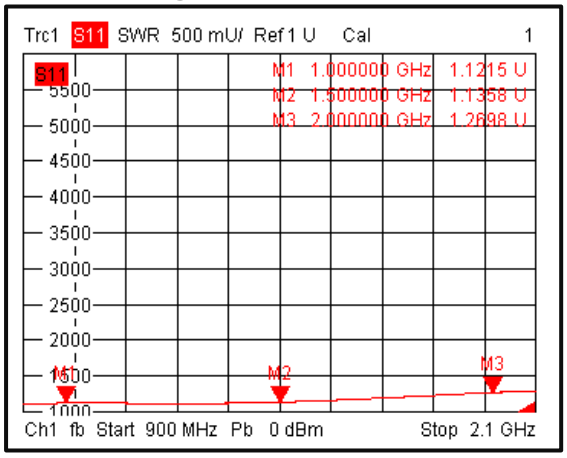
Output VSWR @+25ºC



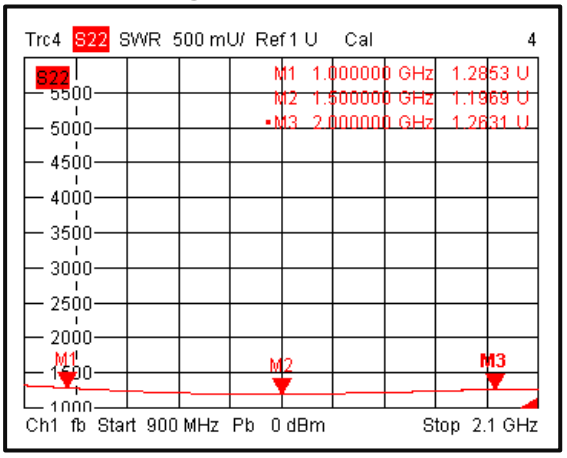
Insertion Loss @-40ºC



Input VSWR @-40ºC

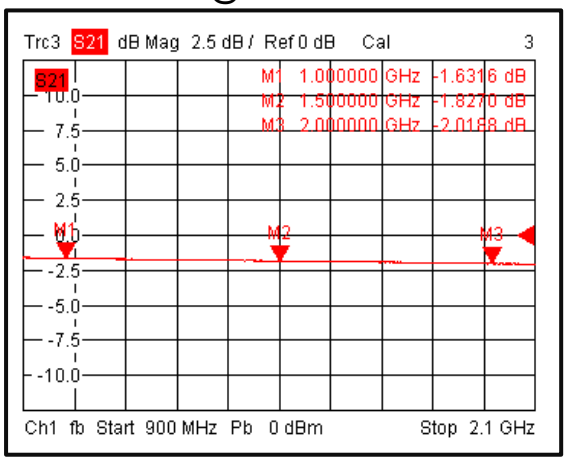


Output VSWR @-40ºC

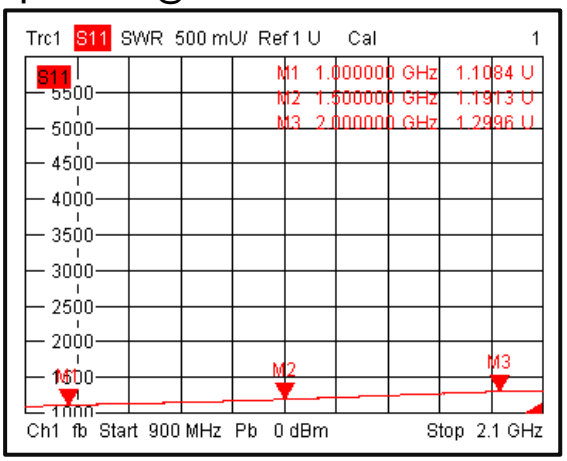


Typical Performance Plots

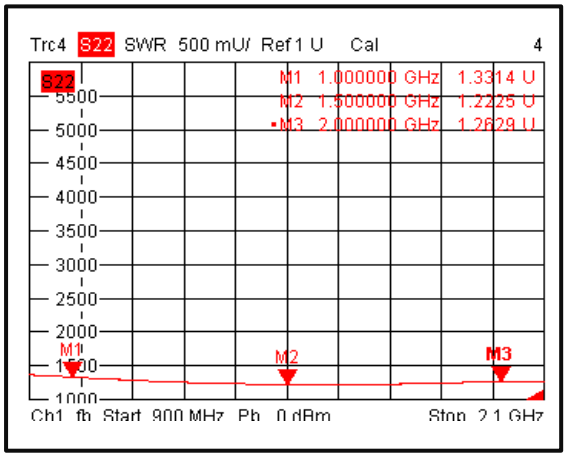
Insertion Loss @+85ºC



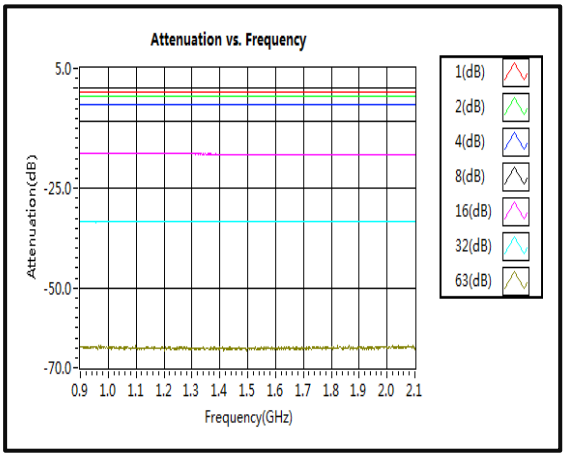
Input VSWR @+85ºC



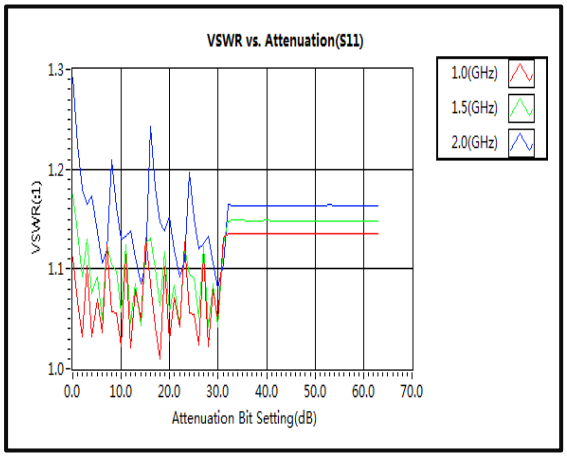
Output VSWR @+85ºC



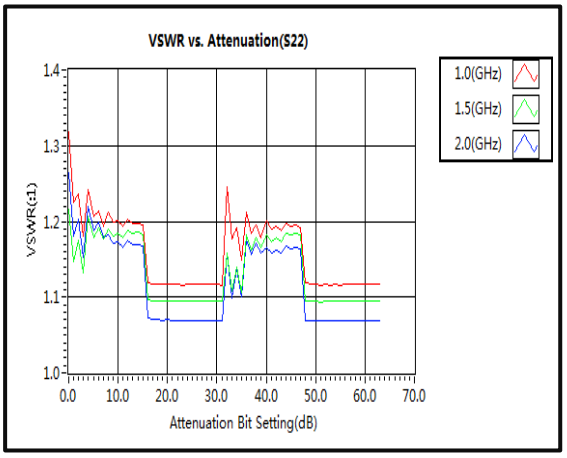
Attenuation vs. Frequency



VSWR vs. Attenuation (S11)

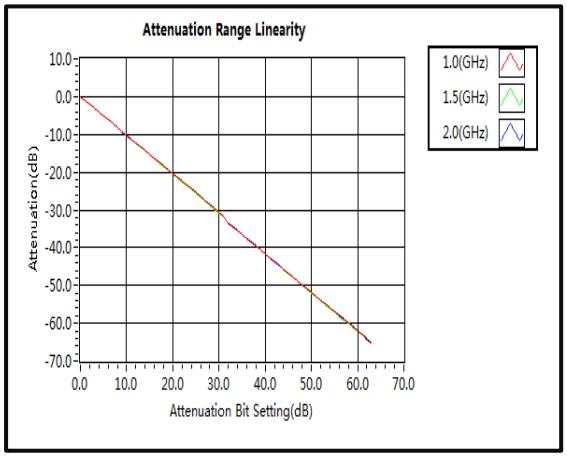


VSWR vs. Attenuation (S22)

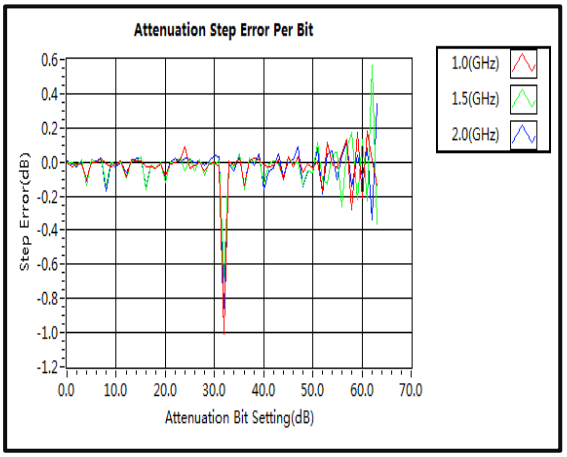


Typical Performance Plots

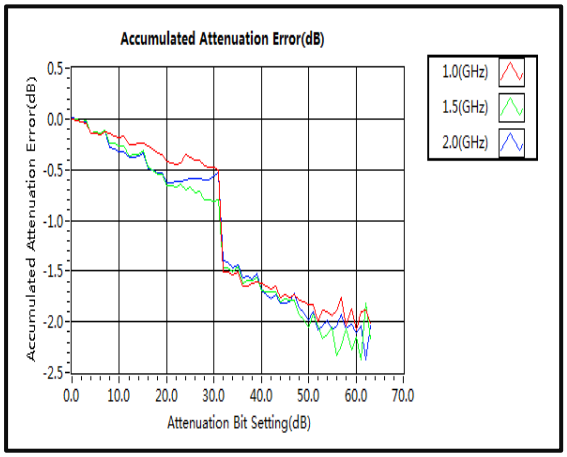
Attenuation Range Linearity



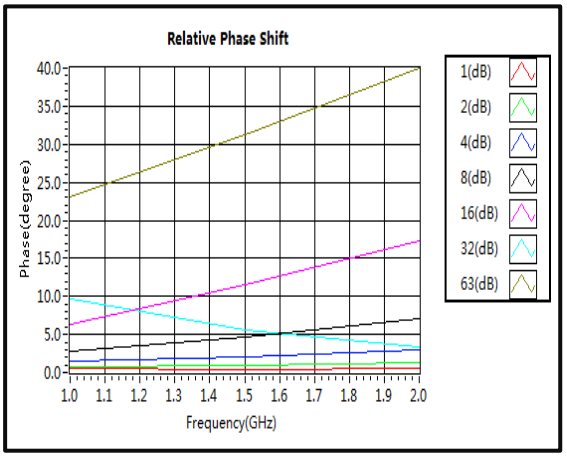
Attenuation Step Error Per Bit (dB)



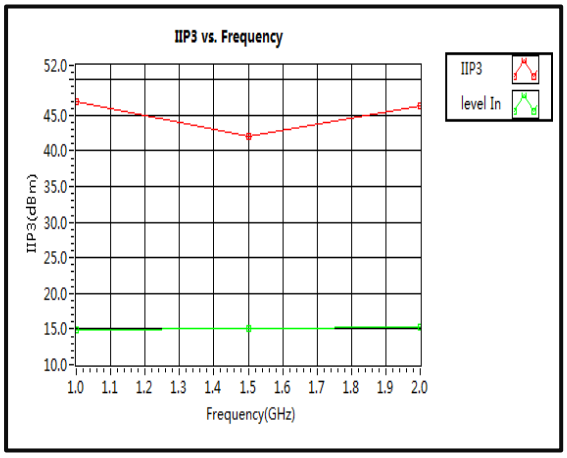
Accumulated Attenuation Error (dB)



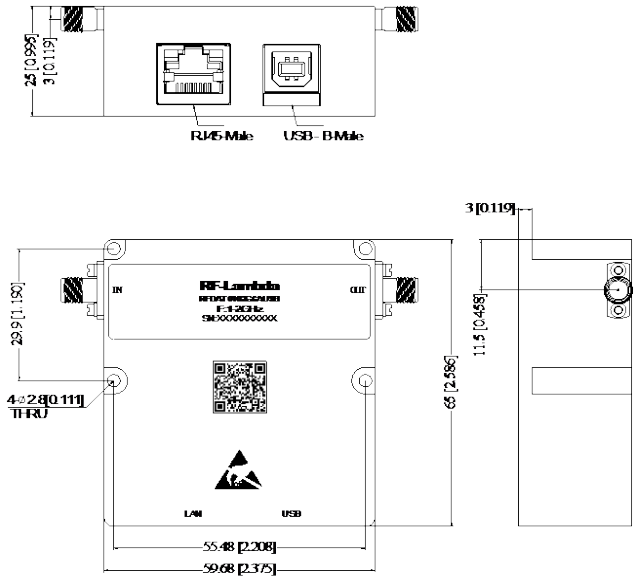
Relative Phase Shift

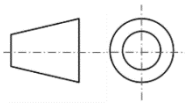


IIP3



Outline Drawing





Notes:
1. Package Material: Aluminum
2. Plating: Nickel
3. All dimensions are in millimeters [inches].
4. Housing Tolerances ±0.2 [0.008]unless otherwise specified.

Packing List

ID	Description	QTY
1	Fig a. USB/Ethernet Control RF Switch	1
2	Fig b. USB2.0 Cable (5 feet / 1.5 meter)	1
3	Fig c. Network Cable (6 feet / 2 meter)	1

Fig b.

Fig c.

Control Content Description

Format Requirement	USB (virtual serial port) Configuration	LAN Interface	Range of Parameters
a.All commands must end with a semicolon. b.All commands are case insensitive. c.Comma is used to separate multiple parameters in commands. d.All commands are suitable for USB(virtual serial port) and LAN interface.	Baud Rate :115200 Data bits : 8 Parity : None Stop bits : 1 Flow Type :None	IP address and Port. Default:192.168.1.225:5100 Use 'USB Control Panel.exe' to set.	x(step):0～63.

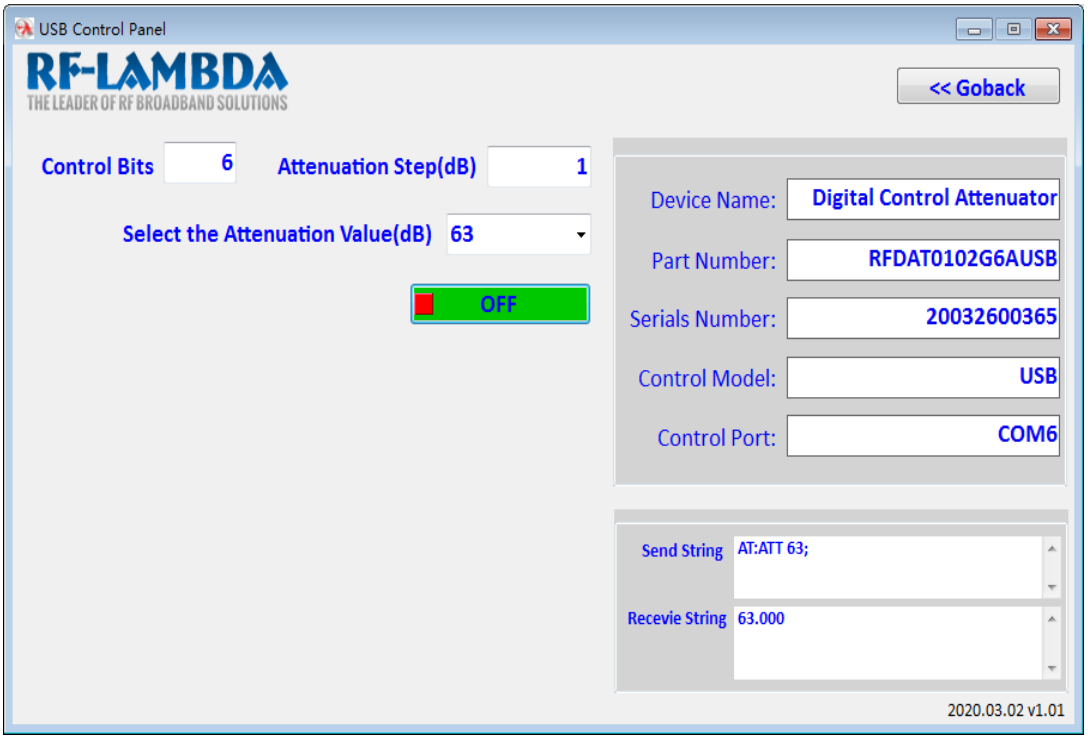
Command Specification

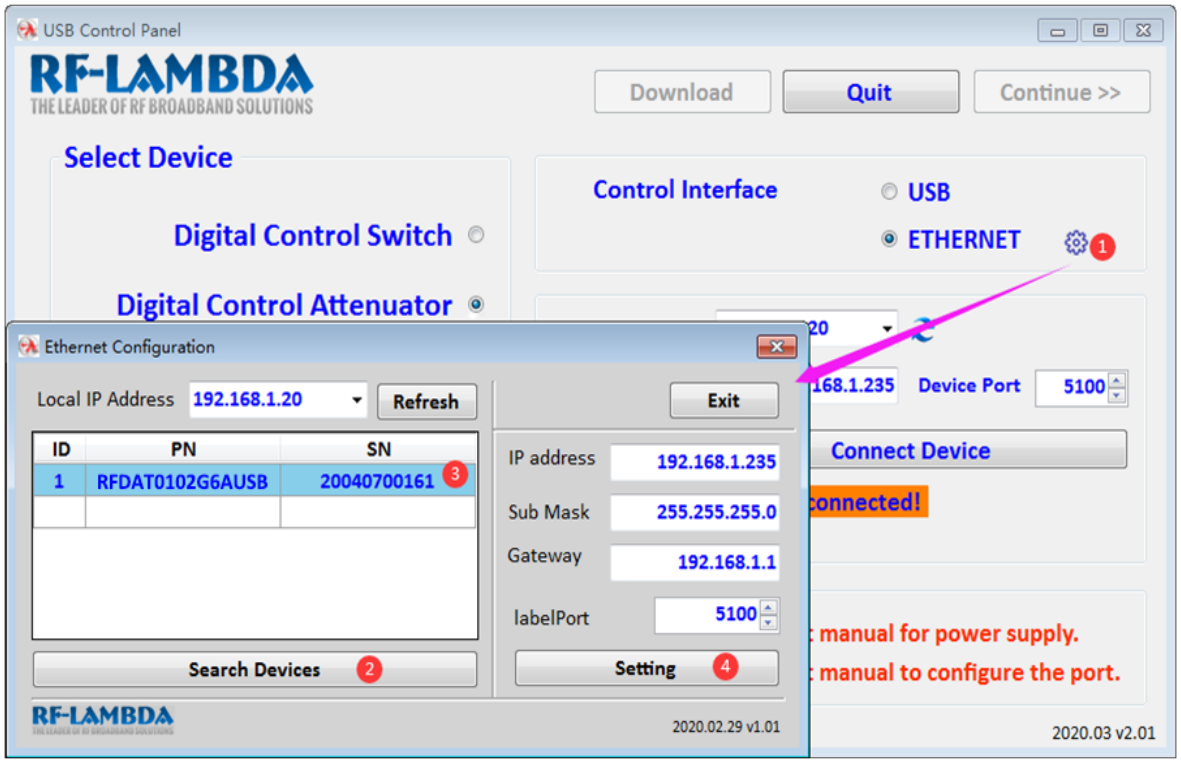
ID	Order	Description	Return	Example
1	*IDN?;	Query product information	Product PN ,SN, Manufacturer ,version	*IDN?;
2	Reset;	Reset the product	/	Reset;
3	AT:ATT x;	Set attenuation step	Attenuation value	AT:ATT 2; Return : 2*step size
4	AT:ATT?;	Query current attenuation value	Attenuation step, attenuation value	AT:ATT? Return :2, 2*step size
5	AT:ATTS?	Query attenuation step size	Attenuation step size	AT:ATTS? Return : step size

Error Code Query

ID	Return	Description
1	E1	Missing semicolon
2	E2	Incorrect command
3	E3	Missing space character
4	E4	Out of range parameters


USB Control Panel
RF-LAMBDA
THE LEADER OF RF BROADBAND SOLUTIONS
Download
Quit
Continue >>
Select Device
Digital Control Switch
Digital Control Attenuator
Digital Control Phase Shifter
Control Interface
USB
1
ETHERNET
Please select a COM port
COM60
2
Connect Device
3
The device number is: 20040700161
Device IP:192.168.1.235:5100
Note
1. Please refer to the product manual for power supply.
2. Please refer to the product manual to configure the port.
2020.03 v2.01


USB Control Panel
RF-LAMBDA
THE LEADER OF RF BROADBAND SOLUTIONS
<< Goback
Control Bits
6
Attenuation Step(dB)
1
Select the Attenuation Value(dB)
63
OFF
Device Name:
Digital Control Attenuator
Part Number:
RFDAT0102G6AUSB
Serials Number:
20032600365
Control Model:
USB
Control Port:
COM6
Send String
AT:ATT 63;
Recevie String
63.000
2020.03.02 v1.01


USB Control Panel
RF-LAMBDA
THE LEADER OF RF BROADBAND SOLUTIONS
Download
Quit
Continue >>
Select Device
Digital Control Switch
Digital Control Attenuator
Control Interface
USB
ETHERNET
1
Ethernet Configuration
Local IP Address
192.168.1.20
Refresh
Exit
ID
PN
SN
1
RFDAT0102G6AUSB
20040700161
3
IP address
192.168.1.235
Sub Mask
255.255.255.0
Gateway
192.168.1.1
labelPort
5100
Search Devices
2
Setting
4
2020.02.29 v1.01
168.1.235
Device Port
5100
Connect Device
connected!
manual for power supply.
manual to configure the port.
2020.03 v2.01

Additional Information

Documentation	Webpage
ESD Policy	https://rflambda.com/pdf/rflambda_esd_control.pdf
Connector Torque Specifications	https://www.rflambda.com/pdf/Torque_Specifications.pdf
Random Vibration Test Standard	https://www.rflambda.com/pdf/rflambda_random_vibration_MIL-STD-202G.pdf

Ordering Information

Part Number	Modification	Description
RFDAT0102G6AUSB	Standard	1-2GHz USB / Ethernet Digital Control Attenuator

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