UDA402-060Q WAVESLINE PROGRAMMABLE ATTENUATOR

Product Features

- Up to 4 GHz Operation
- 60dB Tuning Range at 0.25dB Step
- 50 Ω System Impedance
- Unique USB Powered and Controlled
- Low Power Dissipation
- Easy Control by Software.
- 50mm x 50mm Aluminum Housing

Applications

- Power Control
- Lab Testing
- ATE

The UDA402-060Q is a broad band, high performance, low cost programmable attenuator that designed for power control and lab testing.

The UDA402-060Q works with a single USB connection with host computer, and can easily be controlled by multi Virtual Instrument software and languages.

The UDA402-060Q is delivered in a compacted 50mm x 50mm package.

Electrical Specifications

Parameter	Specification			Condition
	Min.	Typ.	Max.	
RF Performance				
Operation Frequency [MHz]	50		4000	
Attenuation Range [dB]	0		60	50M ~ 4GHz
Attenuation Step [dB]		0.25		
Attenuation Accuracy [dB]			±0.15+5%	f = 2GHz
Insertion Loss [dB]		-2.6		1GHz @ Room Temp
		-3.5		2GHz @ Room Temp
		-5.8		4GHz @ Room Temp
P1dB Compression [dBm]	+30	+34		f = 2GHz
Return Loss [dB]		<-10		50M ~ 4GHz
Input IP3 [dBm]		+52		f = 2GHz , p = +18dBm/Tone,
Max. Input Power [dBm]		+30		
DC Performance				
DC Power Supply [V]		+5V		Unique USB* Powered
DC Power Supply [mA]		30		Via USB
USB Standard		2.0		USB 2.0 Full Speed
Attenuation Control**				
Control Software		UATT		exe, Windows OS, .Net 4
Devices Driver				Windows Driver
Windows API				Wrapped in dll

***USB Type B*

***Contact your sales respective for more information*

Device Driver

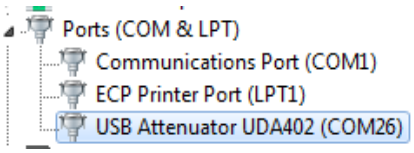
A device driver is required to be installed on target host computer prior to controlling the attenuator. The driver is developed for Windows OS. Linux is not supported at this time.

The driver package can be found on www.wavesline.com under product page.

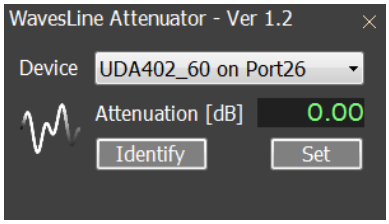
Control the Device

UATT.exe is the user interface on host computer. To control the attenuator, always follow below procedure.

1. Download driver package and software package from www.wavesline.com, then unzip them.
2. Plug attenuator device to host computer.
3. Install driver. This process only needs to be performed once.
    a. Go to windows device manager, and find the device named “USB Attenuator UDA402”
    b. Right click and select “Update Driver Software”
    c. Browse to the folder where driver package is unzipped.
    d. Select “yes” if OS asks whether to install this 3rd party driver. (this could happen when target OS is windows x64)
    e. When driver is successfully installed, it will appear under “Ports” category in device manager. And LED indictor on attenuator device will become to light.



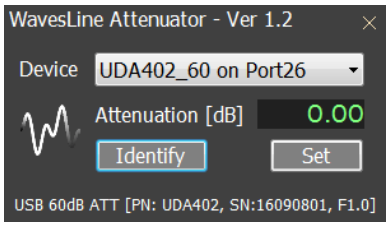
4. Browse to the folder where control software is unzipped. UATT.exe is the host control software will be used.
    a. Double click UATT.exe to start.



**UATT.exe requires .Net FrameWork 4 on host pc.*

    b. The program scans devices on starting, and all available attenuator devices will be listed under “device” section. Select target device from the drop-down list.

c. Use ‘Identify’ button to identify target device. The LED indicator will flash several times on target attenuator device. This function also returns device information such as model and serial.



d. The attenuation is set to maximum value on power up. In order change attenuation,
   i. Change attenuation number on ‘Attenuation [dB]’ section. This could be down by key-in a valid number, use ‘Up’, ‘Down’ arrow key or use mouse wheel.
   ii. Click ‘Set’ button.

Customer Program

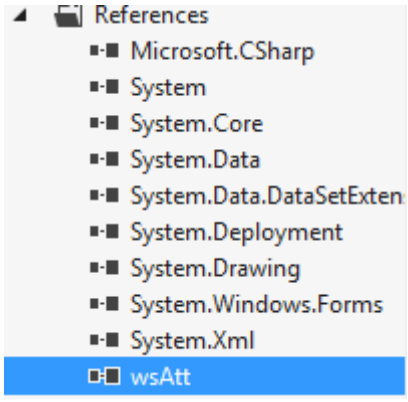
To develop and control attenuator devices in customer ATE software, there are 2 possible ways to achieve.

Windows OS treats the attenuator device as ‘virtual’ COM port. Thus, user can simply send commands, read status through this ‘virtual’ serial port.

An easier way is to use wrapped dll. Wavesline provides user dll(wsatt.dll) to control the device. The dll can be found in control software package. The dll is compiled and wrapped with MicroSoft® Visual Studio 2012 and .NET Frame Work 4.

Below is an example in language Visual C#.

1) Add wsatt as preference,



2) Add namespace,

```
using wsAtt;
```

3) Declare attenuator Object,

```
wsAtt.viUsbAtt uatt = new
                viUsbAtt(viUsbAttModel.UDA402_60);
```

4) Declare attenuator device list, this is useable when multi devices are connected.

```
uAttDeviceList devicelist;
devicelist = uatt.GetDeviceList();
```

5) Select target device from device list.

```
uatt.PortName = devicelist.portNames[index];
```

- *index: [data type] int*

6) Set attenuation.

```
bool success = false;
uatt.Open();
uatt.SetAtt(attenuation, out success);
uatt.Close();
```

- *attenuation: [data type] decimal*

7) Flash Indictor LED, this helps to identify target device when multi devices are present.

```
bool success = false;
uatt.Open();
uatt.Write("FLASH", out success);
string info = uatt.Write("*IDN?", out success);
//labInfo.Text = info;
uatt.Close();
```

Command System

All commands or data to be sent to attenuator must be in `string` format; and all return values are in `string` format as well. The command string is case sensitive.

Note: A <CR> (char 13 or ox0D) is necessary to terminate the command when using windows standard serial port control/object other than the dll.

Command List

***IDN?**

Query device information, it returns device information in string format.

UATT[space] ***value***

Set attenuation value.
Value = attenuation;

UATT 20 set 20dB attenuation

FLASH

This is used to identify the device when multi devices (with the same Part Number) are attached to the sole host computer. Device indicator LED will flash when receive this command.