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ASPEN™
Wire-Free USB™
User Guide

GENERAL ATOMICS
ULTRA WIDEBAND™

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Introduction

Thank you for evaluating the Aspen Wire-Free USB kit. Aspen is a driverless, Wire-Free USB solution that supports all four of the USB transfer modes. The Aspen Wire-Free USB kit incorporates a state-of-the-art Ultra Wideband radio for optimal performance with a wide range of USB devices.

The Aspen product does not require drivers and as a result, no software installation is required. All you have to do is plug in the Dongles, and properly locate them in your work environment. With an unobstructed range of up to 20 feet, personal computers and peripherals operate as they would with a wired connection.

Please read this manual for optimal placement and use guidelines for your Aspen product.

Key features

- Connects USB devices wirelessly up to 20 feet away from your PC, allowing you to reduce cable clutter on your desk.

- Plug and play: the Aspen Wire-Free USB kit does not require the installation of any drivers. Aspen works with Microsoft Windows XP, Microsoft Windows Vista and Mac OS X operating systems.

- Wirelessly connects up to 8 peripheral devices to one computer.

- Supports USB 1.1 and 2.0 protocols

Components included in the Aspen Wire-Free USB kit

Your Aspen Wire-Free USB kit contains the following items:

Description	Quantity
PC Dongle *(item ①)*	1
Integrated Device Dongle *(item ②)*	2
USB Base Station *(item③)*	1
Articulated Swivel Adapter *(item ④)*	1
Power Supply *(item ⑤)*	2
USB A/B Adapter *(item ⑥)*	2
User's Manual	1
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Product Overview
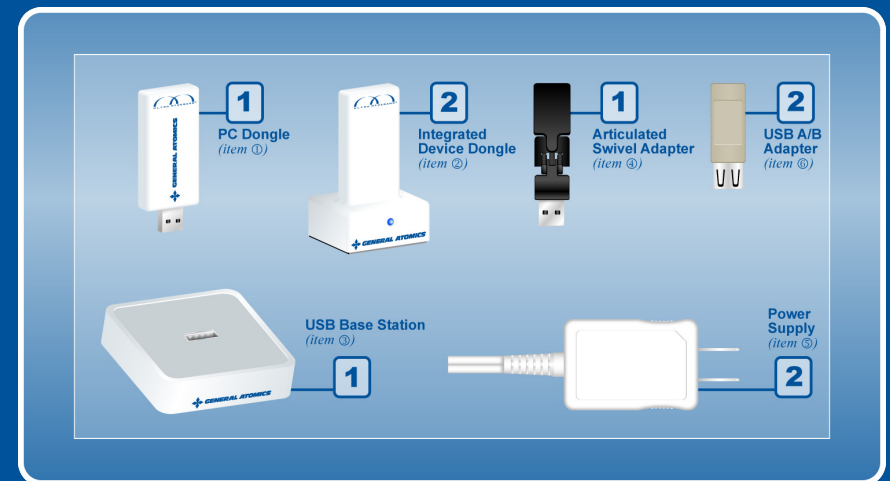
Installation

Proper Orientation of the Dongles

The Aspen Dongles use the latest Ultra Wideband technology to connect wirelessly.
The Dongles are designed to not interfere with any other communication technology.
Since the Dongles transmit at low power levels, the orientation and location of the Dongles
is important in achieving optimal performance.

General rules for getting the best performance from your Aspen kit:

The Integrated Device Dongles *(item ②)* should be positioned so that they are in direct
line of sight with the PC Dongles *(item ①)*.

The Dongles should be positioned in a vertical orientation. On the computer / host
side, you are provided with an Articulated Swivel Adapter *(item ④)* and a USB Base
Station *(item③)* to facilitate this orientation.

Raising the Dongle height can improve the range of the wireless connection.

Besides using direct line of sight, Ultra Wideband uses signal reflections to maintain con-
nection, so it is important that Dongles are placed in an open area. For example, place-
ment of the Dongles on a shelf is not recommended because the signals may be blocked.

For best results, orient the PC Dongle *(item ①)* and Integrated Device Dongles *(item ②)* so
the narrow edges face each other, as shown in the figure below.
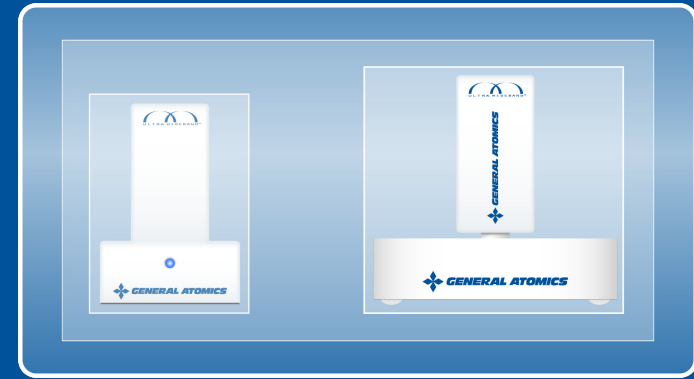
Connection Steps
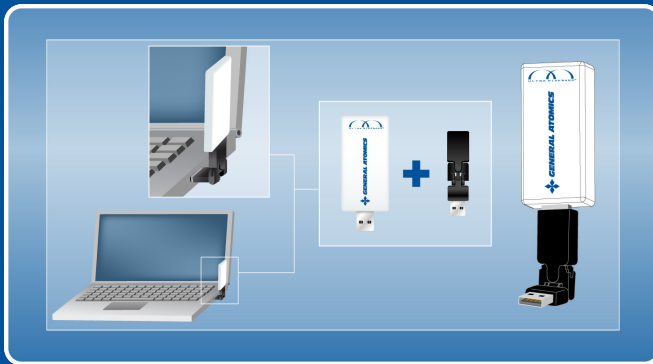
PC side: Depending on the location and the orientation of the USB connector on the
PC, you may need to use the Articulated Swivel Adapter *(item ④)* or the USB Base Sta-
tion *(item③)* to properly connect and orient the PC Dongle *(item ①)*.

Plug the PC Dongle *(item ①)* into the USB Base Station *(item③)* (or the PC directly
using the Articulated Swivel Adapter *(item ④)*) and connect the USB Base Station
(item③) to the PC.

Make sure the PC Dongle *(item ①)* has vertical orientation and clear line of sight to
the Integrated Device Dongle *(item ②)*, and is not obstructed by the body of the PC.

The blue LED on the PC Dongle *(item ①)*, the Integrated Device Dongle *(item ②)*, and
the USB Base Station *(item③)* will light up to indicate power to the device.
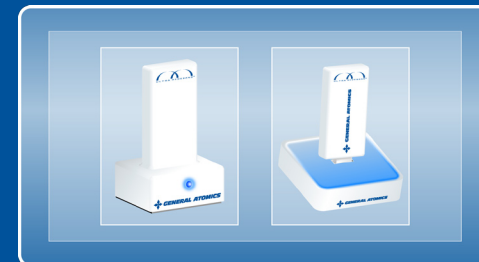
Device side:

Connect the Integrated Device Dongle *(item ②)* to a power source using the provided Power Supply *(item ⑤)*.

Connect the USB cable from the Integrated Device Dongle *(item ②)* to your peripheral device (hard drive, printer, webcam, flash drive, etc.). If your device has a USB 'A' connector, use the provided USB A/B Adapter *(item ⑥)*.

If there is a power switch on your peripheral device, turn it on.

Repeat above steps for all the peripheral devices that you want to connect using the Aspen Wire-Free USB kit.

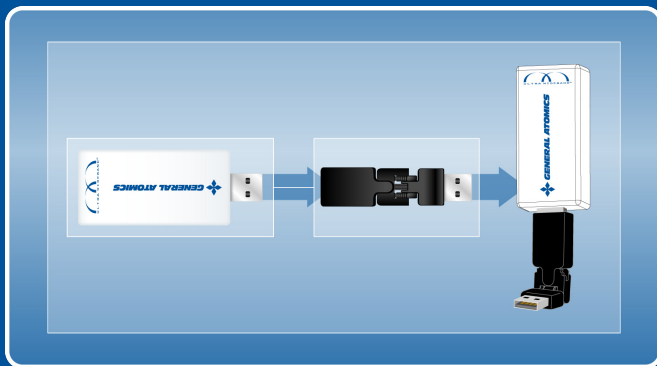**It can take up to 15 seconds for your device to connect to the computer.**

Aspen has excellent multi path performance, but there has to be a path for propagation of radio waves between the two Dongles in order for the Ultra Wideband radios to perform effectively. If the paths between the two radios are blocked for a length of time, then the peripheral device may disconnect and reconnect automatically. This might happen repeatedly while the link is unstable. Normal operations will resume when the obstructions are removed.

The Aspen solution should operate like your wired solution did, but without the inconvenience of the wires. You're now ready to use your USB peripheral devices.

Using the USB A/B Adapter

There are two types of connectors commonly used in USB:

- A connectors: normally found on a PC or USB hub
- B connectors: normally found on USB devices.

Certain devices, like flash drives and video cameras, have 'A' connectors so they can be plugged directly into the PC. However, the Integrated Device Dongle's *(item ②)* USB cable is a 'B' connector. So, in some cases, you must use the provided USB A/B Adapter *(item ⑥)* to connect between a device with an 'A' connector and the Integrated Device Dongle's *(item ②)* 'B' connector as shown in below image.

Using the Articulated Swivel Adapter

Some computers have the USB connector in a location where by using the provided Articulated Swivel Adapter *(item ④)*, you can orient the Dongle vertically.
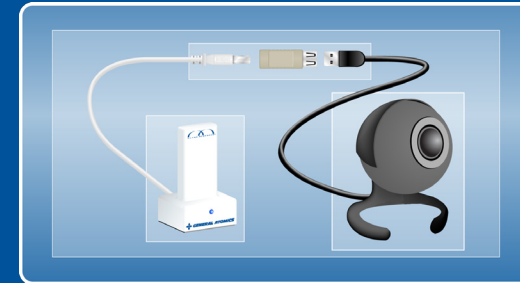
Using the USB Base Station

With certain computers, you might prefer to use the provided USB Base Station *(item③)* to connect the PC Dongle *(item ①)* in a way that allows for vertical orientation and direct line of sight with the Integrated Device Dongles *(item ②)*.
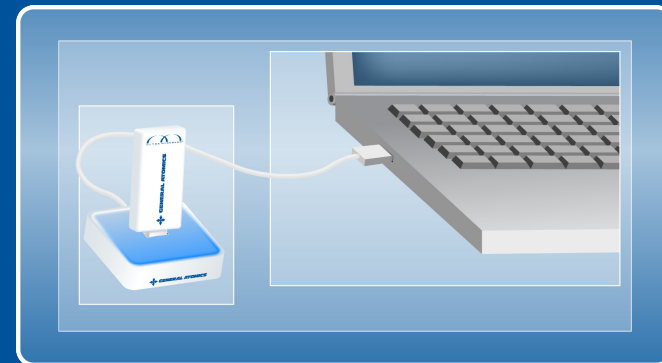
Troubleshooting Guide

If your device does not connect correctly, follow these troubleshooting steps.

Device not working?

Verify that the power source is plugged in to your peripheral device. Verify that your peripheral device works when directly connected to the computer. This step will confirm that your peripheral device drivers are installed and working, and that your device is functioning.

Peripheral device is working, but is not connected to my computer.

Verify that the PC Dongle *(item ①)* is plugged into the USB Base Station, or directly into the PC and that the Integrated Device Dongle *(item ②)* is plugged into the peripheral.

The connection with the device is intermittent.

For best performance, verify that the direct line of sight between the PC Dongle *(item ①)* and the Integrated Device Dongle *(item ②)* is not blocked. Further, increasing the height of the Dongles can improve the connection.

The device used to work, but is no longer working.

This may be an indication that the device is at the maximum range. Move the Integrated Device Dongle *(item ②)* closer to the PC Dongle *(item ①)* until the connection is restored.

Cannot get the devices to connect when using a USB Hub.

The Aspen Wire-Free USB solution does not support USB hubs. The Aspen PC Dongle *(item ①)* needs to be connected to the PC directly and will not work if connected through a USB hub. Also, USB hubs and compound devices with built-in hubs (like certain keyboards) cannot be attached as peripheral devices on the Aspen network.

Since Aspen has a built-in hub and can connect to up to 8 devices simultaneously, it will eliminate the need for wired hubs.

I have tried all the above steps, but the device is still not working.

Try correcting the problem on the device side.

If you are running an application program associated with the device (such as a Video Capture program used with a webcam)
  a. Close any error dialogs.
  b. Close the application program. *(cont. on page 17)*

Disconnect the Integrated Device Dongle *(item ②)* from the peripheral and the Power Supply *(item ⑤)*. Wait ten seconds, then reconnect. The device should now be connected wirelessly to the PC.

You may now re-open any peripheral related applications.

The device is still not connecting.

Try correcting the problem on the PC side.

If you are running an application program associated with the device (such as a Video Capture program used with a webcam)
  a. Close any error dialogs.
  b. Close the application program.

Unplug the PC Dongle *(item ①)* from the computer. When the PC Dongle *(item ①)* is disconnected, the radio link is dropped.

Wait 10 seconds, re-plug the Dongle back into the PC. This:
  a. causes the PC Dongle *(item ①)* to reconnect to the PC
  b. re-establishes the radio link to the Integrated Device Dongle *(item ②)*
  c. and, allows the device to reconnect to the PC.

You may now re-open any peripheral related applications.

If the device still does not work, please contact uwbsupport@ga.com

Technical Specifications

Part	Model Number
PC Dongle	8-0049-0000-EDJ4S2
Articulated Swivel Adapter	8-0049-8002
USB Base Station	8-0049-7000
Integrated Device Dongle	8-0049-0003-EDJ4S2
Power Supply	8-0049-8000
USB A/B Adapter	8-0049-8001

Parameter	Value
Operating Range	20 Feet
Data Rate	40 Mbps
Frequency Range	3.1GHz to 7.3 GHz
RF Modulation Type	Spectral Keying
Max Output Power	-41.25 dBm/MHz
Operating Temperature	0-40°C
Operating Humidity	10-90% relative humidity non-condensing
Operating Systems supported	Windows XP, Vista, Mac OS X

Notices

FCC Notice:

"A UWB device operating under the provisions of this section shall transmit only when it is sending information to an associated receiver. The UWB intentional radiator shall cease transmission within 10 seconds unless it receives an acknowledgement from the associated receiver that it's transmission is being received. An acknowledgement of reception must continue to be received by the UWB intentional radiator at least every 10 seconds or the UWB device must cease transmitting."

The Users' manual or instruction manual for an intentional or unintentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

THIS DEVICE MUST BE INSTALLED IN A LOCATION THAT IS NOT ACCESSIBLE TO THE GENERAL PUBLIC. INSTALL THE DEVICE SO THAT THE ANTENNA IS MORE THAN 20CM FROM UNSUSPECTING PERSONNEL. FAILURE TO INSTALL THIS DEVICE AS DESCRIBED WILL RESULT IN A FAILURE TO COMPLY WITH FCC RULES FOR RF EXPOSURE AND IS DISCOURAGED. ONLY ANTENNAS APPROVED WITH THE DEVICE MAY BE USED. THIS DEVICE MAY NOT BE CO-LOCATED WITH OTHER TRANSMITTERS WITHOUT FURTHER APPROVAL BY THE FCC.

Aspen Wire-Free USB evaluation kits were certified with
FCC ID SC9EDJ4S2-PC

Patent Information

Patent Coverage Notification: This product or its use may be covered by one or more of the following US Patents: 6781470, 6895059, 6898652, 6989782, 7177368, 7236464, and other patents in certain foreign countries.

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Support

For additional support with the Aspen Wire-Free USB kit, please contact: uwbsupport@ga.com.