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## HuddleCamHD Wireless USB 2.0 Extender

Model Number: HC-USB2-AIR

### System Installation & Operation Manual



Easy to deploy USB 2.0 extension system for small to medium conference rooms, offices or other spaces!

Provides simultaneous bi-directional USB 2.0 connectivity for up to 4 USB 2.0 devices. Removes clutter and cabling mess from USB 2.0 device deployments.



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## Feature Summary

The HC-USB2-AIR is a stable, low-latency Wireless USB Link designed for Wireless USB (2.0) devices of all kinds, including Wireless Virtual Reality, Augmented Reality and Mixed Reality applications. The kit is a combination of two identical modules which are named as HOST and DEVICE modules. HOST module is connected to PC and DEVICE module is connected to the USB device(s). HOST and DEVICE modules establish a stable and low latency wireless link when powered.

## In the Box

- Host Transceiver Module.
  - *for PC*
- Device Transceiver Module.
  - *for USB device(s). Module powered by adapter.*
- USB Power Adapter.
  - *for powering device transceiver module and your 5V USB device.*
- USB 2.0 2m M-M Cable
  - *for Device – Power Adapter connection*
- 5VDC Power Supply
  - *for Power Adapter.*
- This Manual.

## Key Technical Specifications

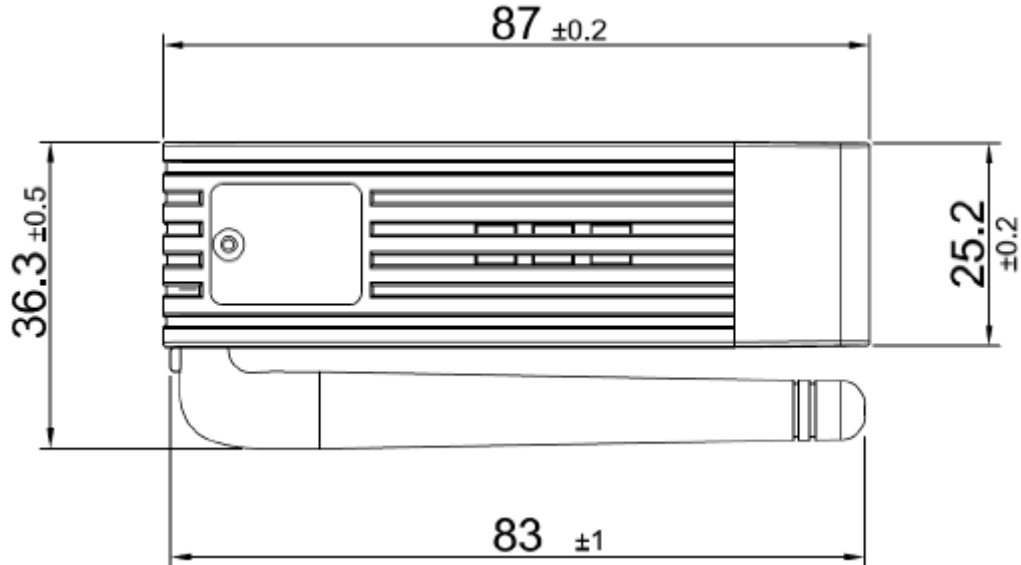
<b>General Specifications</b>	
<b>Attribute</b>	<b>Description</b>
Standards	WiMedia PHY v1.1 and USB 2.0
Practical Bandwidth	30 Mbps per link
Maximum USB Devices per Link	4 (Supported with USB 2.0 Mini Hub)
Maximum Number of Links per Area	8
Supported WiMedia Band Groups	1, 3, 6 (3.1 – 9 GHz)
Certified Band Group & Frequency	Band 1, 3168 – 4752 MHz
Operational Latency	1-2 milliseconds
Operating System	Windows 7 and above



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<b>Electrical Specifications</b>					
<b>Parameter</b>	<b>Description</b>	<b>Min.</b>	<b>Typ.</b>	<b>Max.</b>	<b>Unit</b>
5V	+5V Input Voltage	+4.5	+5.0	+5.5	V
TX Power	Power Consumption, Continuously Transmitting		1.00		W
RX Power	Power Consumption, Continuously Receiving		1.15		W
Idle Power	Power Consumption, Idle state		0.60		W
<b>RF Specifications</b>					
<b>Parameter</b>	<b>Description</b>	<b>Min.</b>	<b>Typ.</b>	<b>Max.</b>	<b>Unit</b>
RX Sensitivity	Band Group 1, 3, 6, 53.3 Mbps, PER <%8	-61	-78		dBm
	Band Group 1, 3, 6, 106.7 Mbps, PER <%8	-68	-76		
	Band Group 1, 3, 6, 200 Mbps, PER <%8	-65	-72		
	Band Group 1, 3, 6, 320Mbps, PER <%8	-63	-70		
	Band Group 1, 3, 6, 400 Mbps, PER <%8	-62	-68		
	Band Group 1, 3, 6, 480 Mbps, PER <%8	-60	-67		
TX PSD	Transmitted signal PSD			-41.3	dBm/MHz
<b>Note:</b> RX Sensitivity is tested in accordance with WiMedia C&I 1.2					
<b>Environmental Specifications</b>					
<b>Parameter</b>	<b>Description</b>	<b>Min.</b>	<b>Max.</b>	<b>Unit</b>	
T_operate	Operating Temperature Range		0	+85	°C

## Device Dimensions (in mm – Not to Scale)



## Module Pinout Description

Module pin functionalities and descriptions are same as standard USB 2.0.

Pin	Function	Description
1	+5V	Main Power
2	D-	USB Data Negative Signal
3	D+	USB Data Positive Signal
4	GND	Ground

## System Installation

### Driver Software

- **Download**
  - Before plugging the Host Module into your PC, first download 'UWB Connection Manager' from the HuddleCamHD web site <http://huddlecamed.com/resources/>. Click on the 'USB2Air Driver Software' link for download instructions. Follow the instructions to download the 'Wireless\_EU\_1\_0\_5\_0.exe' software.
- **Install**



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- Run the 'Wireless\_EU\_1\_0\_5\_0.exe' program on the intended PC. This will install the required drivers as well the 'UWB Connection Manager' software. UWB Connection Manager will run in your system tray and can be accessed at any time. However, while convenient for troubleshooting, it is not required for operation of the HC-USB2-AIR system. Note: Your PC must remain on-line while completing the driver installation.

### Physical Installation

- **Install Device Driver** software on PC before making physical connections, as described above.
- **Power Adapter (Connects your device and the Device Module)**
  - Connect DC power supply to Power Adapter and to AC outlet (mains).
- **Device Module**
  - Remove cap from Device Module and connect the Device Module to one side of the Power Adapter.
- **Device**
  - Connect desired USB 2.0 device to the other side of the Power Adapter using the USB 2.0 male-male cable (or the USB pigtail cable of the device if the cable is integrated into the device (e.g. Mouse, keyboard, webcam).
  - Connect Device to AC outlet (mains), if required and switch device on, if required. Whenever possible, connect both the USB 2.0 device and the HC-USB2-AIR power supplies to the same AC mains circuit (or at least a circuit on the same leg/phase, when same circuit is not possible – in order to avoid “ground loops”).
- **Host Module**
  - Remove cap from Host Module and connect Host Module to USB port on PC.
- **Driver Loading**
  - After all connections are complete, wait for all drivers to be automatically loaded by Windows (e.g. HC-USB2-AIR and each device connected to the hub)
- **Complete!**
  - You are now ready to use your USB 2.0 devices across the HC-USB2-AIR wireless connection. If you experience any issues, see the Troubleshooting section of this manual.



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## Suggested Uses for the HC-USB2-AIR system

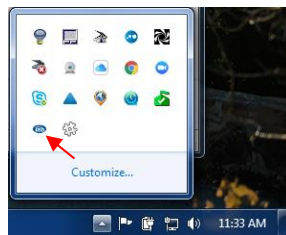
### USB 2.0 connectable:

- Barcode Scanner
- Camera
  - Webcam
  - PTZ cam
  - Scope cam
- HDD/SSD (or enclosure)
- Keyboard
- Memory stick (flash drive)
- Microscope
- Microphone
- Mouse
- Network Interface
- Printer
- Scanner
- Sensor
- Speaker
- TV Tuner
- Video Adapter
- VR Gesture Control
- VR Headset
- And More...

Note: for a list of compatibility-tested USB 2.0 devices, please visit the product page on the HuddleCamHD website <http://huddlecamed.com/usb2air/>. This list is by no means limiting, as we cannot possibly test every USB 2.0 device ever created. Use this list instead as a guide for the types of devices that have proven to work well with the HC-USB2-AIR.

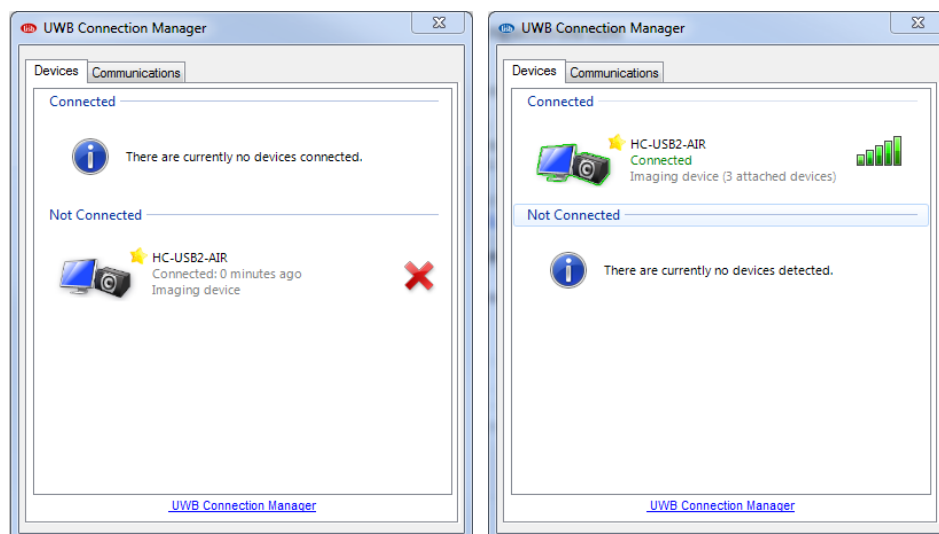
## System Troubleshooting

- Cannot see a Device connected to the PC
  - Check all physical connections. See Physical Installation section above.
    - Note: Do not connect the HC-USB2-AIR Device Module directly to your PC. The Host Module is always connect to the PC.
  - Check power feed to Power Adapter. Is the power supply plugged into the Power Adapter? Is the power supply plugged into a working AC outlet (mains)?
  - If the Device requires its own power, is it plugged into a working AC outlet (mains)?
  - Is the Device switched on?
  - Have you installed the software drivers successfully? See 'Driver Software' section above.
  - Check your connection via the UWB Connection Manager tool running in your system tray (bottom right hand corner of Windows desktop)
    - If the UWB Icon appears Red, the Host Module is not properly plugged into the PC, the Device Module is not powered properly, or the two



Modules do not fall into their mutual "coverage area". If it appears Blue, all Module connections are good.

- Click on icon to open UWB Connection Manager software and switch to the 'Devices' tab (if not already open).



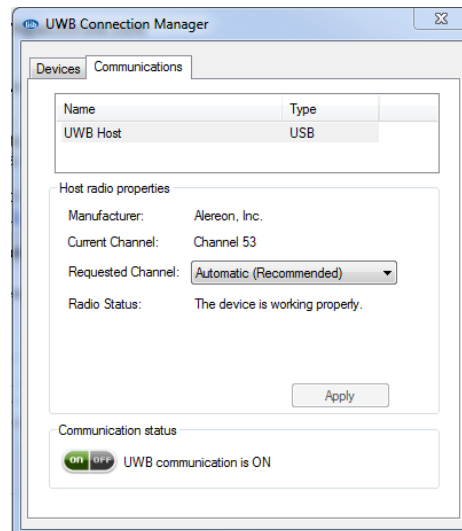




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- When not properly connected (red icon, above), the HC-USB2-AIR will show up under 'Not Connected'.
  - When properly connect, the HC-USB2-AIR will appear under 'Connected' and show relative RF signal strength as well as how many USB Devices are connected to the Device hub (note that 'composite' USB devices may show up as more than one device. Even though you physically only plug one physical device into the hub, e.g. A webcam with built-in microphone will connect as 2 devices: video and audio).
- Connection is intermittent (e.g. USB camera is losing image, USB mic is distorting or dropping out).
    - Your USB 2.0 Device may not be working correctly. Connect your USB 2.0 Device directly to your PC via wired USB to make sure that it is fully functional before connecting it to the HC-USB2-AIR system.
    - Signal strength may be weak (see Signal Strength meter on 'devices' tab of UWB Connection Manager, as described above):
      - System has an effective range of about 15' to 20'. Success at greater distances can vary significantly based upon the environment and the USB 2.0 devices connected. Try moving the Host and Device antennae closer or improving their visibility (see below).
      - System absolutely requires 'line of sight'. Be sure that both Host and Device Module antennae are upright and 'visible' to each other (note: signal can bounce off of walls, floor and ceiling to create 'line of sight'). See obstructions, below.
      - Metal, stone, and other obstructing objects, including the human body can block RF signals. Make sure that neither antennae is being blocked or shrouded in any way.
      - Any RF signal can be affected by EMF (electromagnetic force). Try relocating Host and/or Device antennae away from other electrical devices or AC wiring.
    - Try using a different channel than the auto-selected channel. Open UWB Connection Manager, as described above.
      - Select the 'Communications' tab.

- Select a different Channel from the 'Requested Channel' drop down list.



- Check Signal Strength on 'Devices' tab and test devices for improved performance.
- The system is USB 2.0 compatible. Make sure that all devices only require USB 2.0 connection. If a USB 3.0 device is connected and is USB 2.0 compatible, the device should operate OK but only within its reduced USB 2.0 parameters. Devices requiring full USB 3.0 connection or power will not function properly and are not approved for the HC-USB2-AIR. Note: Some USB 3.0 device may be able to operate over USB 2.0 but will still require USB 3.0 current (>500mA) and so will not be compatible with the HC-USB2-AIR.
- USB Host Controllers inside your PC share their available bandwidth among all of the connected USB ports managed by that particular controller (*actually in the case of a USB 3.0 Host Controller, your USB 2.0 connections will share a USB 2.0 bandwidth allotment and your USB 3.0 connections will share their own USB 3.0 bandwidth allotment*). Therefore, where you connect devices to your PC can have a significant impact on their performance.
  - Your PC may only have one or it may have multiple USB host controllers inside. Typically each host controller will manage a bank or bank of USB ports on your PC. In fact, built-in devices (e.g. integrated webcams) may even be connected to these host controllers – it's not just the visible ports on the outside of the case!).
  - It is important to manage how many and what types of USB devices are connected to a single host controller for best performance (i.e. manage which bandwidth is being shared between which devices). Insight into



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how your PC is provisioned with host controllers and which host controllers support which USB ports (and built-in devices) can be gained by using the Windows Device Manager program. Please see articles on USB management in our Knowledge Base <https://help.huddlecamhd.com/support/home> and resource pages <http://huddlecamhd.com/resources/>.