AudioFetchExpressV5 – Dual Band System Datasheet

AudioFetch Express – Dual Band

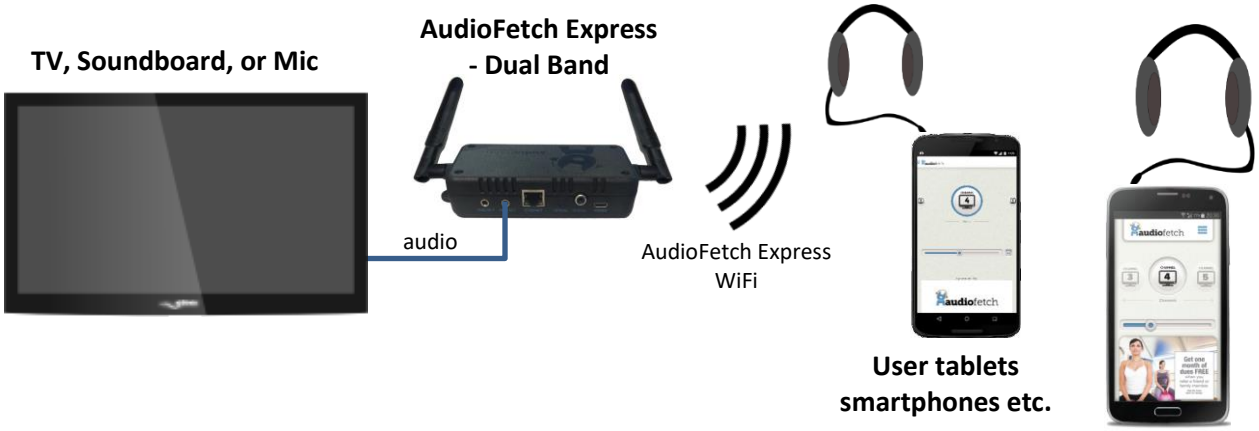
AudioFetch Express – Dual Band is a compact cost-effective solution delivering high-quality low-latency audio from one or two TVs, STBs, or other audio sources via WiFi to personal mobile devices such as smartphones and tablets.

Its included WiFi can operate in 2.4GHz or 5GHz band and be configured as an Access Point or can be connected wirelessly into a pre-existing WiFi network, enabling greatly simplified installations in fitness clubs, sports bars, movie theaters, waiting rooms, meetings, conventions or wherever users need convenient access to in-house audio sources.

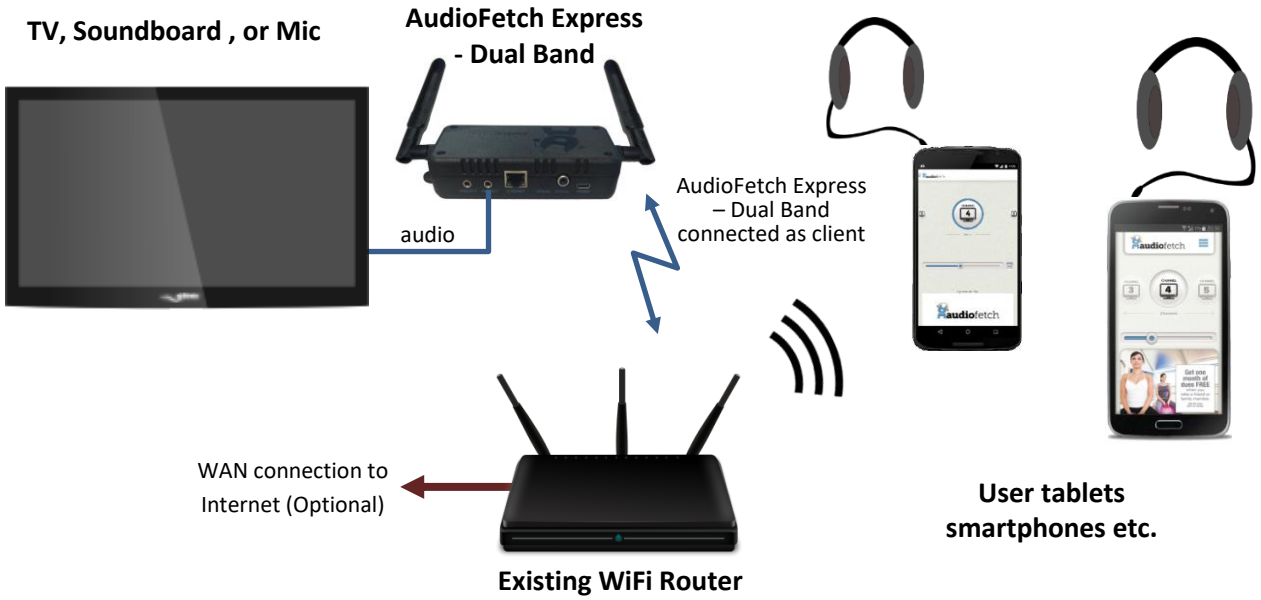
Features

- Wireless networking: operates as an Access Point or connects into existing WiFi
- Operates in 2.4GHz or 5GHz WiFi band
- 1 Stereo or 2 Mono audio channels
- Low system audio latency ≈ 115ms
- Plug-n-Play installation
  - Optional configuration via Web Browser
- Compatible with multiple audio sources:
  - Analog Digital Coax Digital Optical
- Users download AudioFetch App at Apple App®/Google Play® stores
  - App selects channel/source and plays audio in-sync with the video
- Small footprint with simple cabling to TV and flexible mounting
- Audio gain adjustment, real-time signal level monitor
- Cloud-based custom ad delivery and metrics reporting system
- Separate input for condenser microphone for PA applications

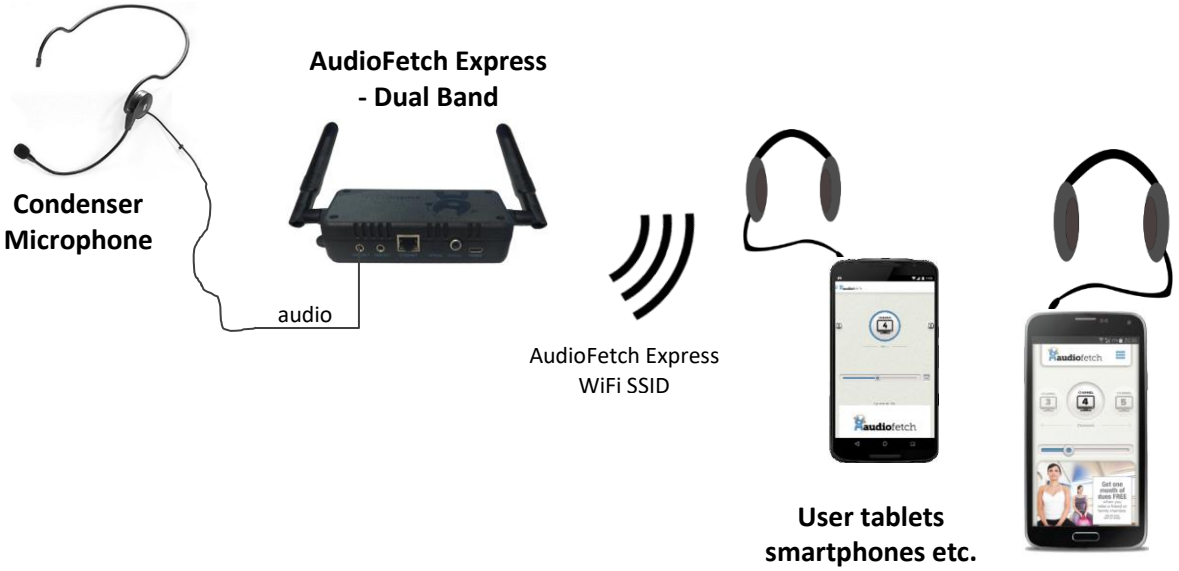
Typical Application – operating as independent Access Point



Typical Application - connecting in to existing WiFi network



Typical Application - PA to mobile devices



There are many more applications! Please contact us for more information.

Typical Installation

1. Install AudioFetch Express – Dual Band in desired location – usually behind/near a TV audio source
2. Connect audio source (TV, etc.) to AudioFetch Express – Dual Band audio input
    a. Audio signals/cabling can be: analog, digital coax, or digital optical
3. Connect AudioFetch Express – Dual Band to USB Charging Adapter
    a. USB Charging Adapter must supply 5V at 1.5A or greater, power connector is USB-C
4. On mobile devices:
    a. Go to Apple App Store® or Google Play® and download/install the free AudioFetch app
    b. Connect to the AudioFetch WiFi Access Point (default SSID: AudioFetch Express)
    c. Start the AudioFetch app and enjoy the personal listening experience provided by the AudioFetch system!
5. Optional custom configuration of the system can be accomplished through web-based or App configuration pages (called the "Doghouse"):
    a. Install and run the AudioFetch Doghouse App on a mobile device connected to the AudioFetch Express network – this will display the AudioFetch Express – Dual Band along with a "Connect" button
    b. Click the "Connect" button
    c. A web browser (or the Doghouse App) will open requesting login credentials
    d. Log in to access the configuration pages

Specifications

EXTERNAL CONNECTORS	
DC Power (USB-C connector)	Connect to a USB charger capable of 5V at 1.5A (not included) USB-C cable is included (3' length)
USB Cable Requirement	Power signals must be on 24 AWG or larger conductors, recommended cable length is 6 ft maximum
Audio Inputs (3 options)	Source is auto-detected/selected with this order of priority if multiple cables accidentally plugged in to a single channel: TOSLINK connector for digital optical RCA connector for digital coax 3.5mm Stereo connector for analog audio
AVAILABLE HARDWARE CONFIGURATIONS	
Number of Channels	1 (stereo), any of the audio input connectors types may be used
Configurable 2-Channel mode	2 mono channels using 3.5mm analog audio connectors only
POWER	
DC Power	+5VDC 1.5A maximum
Power Adapter	No power adapter is included – use a USB charger capable of 5V at 1.5A or more (purchased separately)

AUDIO INPUTS	
Digital Optical Input Encoding Sample Rates supported	S/PDIF signal format over fiber-optic TOSLINK cable Uncompressed PCM, interleaved stereo 48KHz
Digital Coax Input Input Signal Level Input Impedance Encoding Sample Rates supported	S/PDIF signal format over coaxial cable 0.55 Volts P-P typical 75 Ω Uncompressed PCM, interleaved stereo 48KHz
Analog Input 1 Input Signal Level Input Impedance	L/R Stereo into stereo 3.5mm connector, AC-coupled 2.4 Volts P-P maximum 10 KΩ minimum
Analog Input 2 Mic Enabled (1-Ch mode) Microphone compatibility Signal connections Input Signal Level Input Impedance Bias 2-Channel mode (mic not avail.) Input Signal Level Input Impedance	 Condenser microphone (compatible with PC sound card inputs) Compatible with smartphone mics by using adapter cable Tip: bias Ring: input Sleeve: ground 0.42 Volts P-P maximum 2.8 KΩ typical 3.9 KΩ to 5V typical (supplied through tip of phone jack) L/R Stereo into stereo 3.5mm connector, AC-coupled 2.4 Volts P-P maximum 10 KΩ minimum
Audio Gain Adjustment range	+20 to -100 dB in 0.5 dB steps Independent adjustment for each channel and for microphone available through browser- based “Doghouse” configuration pages Additional gain boost available for microphone
2-Channel operation (configurable)	For 2-Channel operation, each 3.5mm stereo analog connector accepts a stereo signal, each of which is internally mixed into a mono signal (each channel in 2-Channel mode is mono). Digital coax/optical connectors are still present but should not be used.
AUDIO FREQUENCY RESPONSE	
Frequency Response	20Hz – 20KHz +/-3dB
AUDIO STREAMING	
System Latency	85ms typical This is based on minimal delays in the network/WiFi and thus represents sum of latencies in the AudioFetch Express – Dual Band, AudioFetch App, and mobile device Operating System only. WiFi, and mobile device performance can affect latency. Some Android

	devices have increased latency. Use of Bluetooth earbuds may add latency.
NETWORK CONNECTIVITY	
WiFi	AudioFetch Express – Dual Band contains built-in WiFi adapter which can operate in 2.4GHz or 5GHz WiFi band (selectable). Operation is in selected band only, simultaneous operation in both bands not supported.
Ethernet	1000Base-TX, half/full duplex, auto-negotiated HP Auto MDI/MDI-X configuration (works with either straight-through or crossover cables)
Addressing	IPv4 (IPv6 not supported)
NETWORK DISCOVERY	**Supported protocols by which AudioFetch App (on mobile device) can discover AudioFetch Express – Dual Band devices on the local network. At least one of these must be supported by the local network.**
SSDP	Multicast based – network must support multicast traffic to/from 239.255.255.250 on all connected devices (AudioFetch Express – Dual Band and all user mobile devices)
SSDP FALLBACK	Modified version of SSDP – network must support multicast traffic from AudioFetch Express – Dual Band to 239.255.255.250 and then forwarded to user mobile devices
mDNS one-shot	Subset of mDNS, simple mDNS query packet from App with standard DNS query payload, unicast UDP response from AudioFetch Express – Dual Band with standard DNS answer payload. (See RFC 6762 section 5.1)
DNS (local DNS server required)	Standard DNS protocol however the network must implement a local DNS server to intercept/respond to AudioFetch DNS queries from user mobile devices
BROADCAST FALLBACK	User mobile device sends query packet to local broadcast address 255.255.255.255
More Information:	For more detailed information on discovery methods, ports, traffic, etc., refer to AudioFetch App Note “Network Quick Start Guide”
WiFi	
Frequency Range	2.402-2.472 5.170-5.250 5.735-5.815 GHz
Wireless Standard	802.11 b/g/n
WiFi Channels supported 2.4 GHz Band 5 GHz Band	Channels available when operating in Access Point mode: 1 – 11, auto 36, 40, 44, 48, 149, 153, 157, 161 In Wireless Client Mode, will automatically connect to best available band/channel (best signal) provided by existing network’s Access Point with matching SSID, not restricted to the channels listed here
Transmit Power	+21dBm (max)

Range – Open Air Test (in Access Point Mode)	230 feet typical
Security/Encryption	none (default) WPA-PSK, WPA-PSK2, WPA-PSK/WPA-PSK2 mixed mode
NETWORKING CONFIGURATIONS	
Networking Configuration	AudioFetch Express – Dual Band typically shipped pre-configured for customer's application. Can be re-configured in the field through web-based configuration pages (called the "Doghouse").
Access Point Mode (default)	AudioFetch Express – Dual Band operates as a self-contained WiFi network with SSID: AudioFetch Express
Wireless Client Mode	AudioFetch Express – Dual Band connects as a client to pre-existing WiFi network (or as a client into another AudioFetch Express – Dual Band operating in Access Point mode)
Wired Only Mode	AudioFetch Express – Dual Band connects as a client to pre-existing network via Ethernet cable
Wireless/Wired Client Mode IP Address	Auto configured via DHCP (default) Can be set to static IP address (using browser-based configuration)
Maximum number of AudioFetch devices	Up to 32 AudioFetch devices operating together (on same network), can be mix of AudioFetch Express and/or AudioFetch Signature (multi-channel) devices
Access Point Mode with Internet Access	AudioFetch Express operates simultaneously in Access Point Mode and connected to a pre-existing WiFi network (with Internet Access) in client mode
NETWORK BANDWIDTH	
Bandwidth consumed by each audio stream (stereo)	50 UDP packets per second averaging 201 bytes each (includes the IP header but not physical layer header) Therefore, UDP (+ IP header) bandwidth is: 10050 bytes/sec (average) for each audio stream (~80Kbps) Discovery and keep-alive control traffic is negligible compared to this
Bandwidth consumed by each audio stream (mono)	50 UDP packets per second averaging 121 bytes each (includes the IP header but not physical layer header) Therefore, UDP (+ IP header) bandwidth is: 6050 bytes/sec (average) for each audio stream (~48Kbps) Discovery and keep-alive control traffic is negligible
MOBILE APP	
Availability	Search for "AudioFetch" in Google Play Store or Apple App Store Cost: Free
Android Compatibility	8.0 or later
iOS Compatibility	11.0 or later
DIMENSIONS	

Dimensions (not including flange or antennas)	5.30 x 2.63 x 1.25 in.
Mounting Flange	Mounting flange protrude approx. 0.56 inches on one side
Drawing	Enclosure drawing available upon request.