Model 370A Intercom Beltpack
Two Channels, Dante Technology

Key Features

- Dante audio-over-Ethernet technology
- Two independent talk and listen channels
- Integrated call function
- Supports dynamic and electret microphones
- 5-pin female XLR headset connector
- Excellent audio quality
- Uses STcontroller for configuration
- AES67 and Dante Domain Manager™ support
- Power-over-Ethernet (PoE) powered

Introduction

The Model 370A Intercom Beltpack begins with the features offered by traditional 2-channel party-line intercom user devices and adds a range of new capabilities, along with the advanced performance and flexibility that Dante® audio-over-Ethernet provides. Over a standard IP network, multiple Model 370A units can be used in party-line (PL) intercom applications with help from an external Dante-enabled audio matrix such as the Studio Technologies Model 5422 Dante Intercom Audio Engine. Alternately, units can be used "point-to-point" or interfaced with Dante-compatible matrix intercom systems.

Only a single Power-over-Ethernet (PoE) connection is required for operation. Key user features can be easily configured using the STcontroller software application. Configurable parameters include electret microphone powering, microphone preamplifier gain, talk button operation, and headphone channel assignment. User features include integrated sidetone, call function, and remote mic kill ("talk off"). The wide range of capabilities, along with the excellent audio quality provided by the digital audio signal path, offers a unique and powerful user experience.

Set up and configuration of the Model 370A is simple. An etherCON® RJ45 receptacle is used to interconnect with a standard twisted-pair Ethernet port associated with a local-area network (LAN). This connection provides both power and bidirectional digital audio. A broadcast or intercom-style stereo or monaural headset with a dynamic or electret (DC-powered) microphone interfaces with the unit using a 5-pin XLR connector.

The STcontroller software application is used to select the unit's operating parameters. Two talk pushbutton switches can be configured for optimal operation. Two push-in/push-out ("pop out") rotary controls make it easy to set and maintain the desired headphone output level. The Model 370A's enclosure is made from an aluminum alloy which offers both light weight and ruggedness. A stainless steel "belt clip," located on the back of the unit, allows direct attachment to a user's clothing.

The audio quality of the Model 370A's audio channels is excellent, with low distortion, low noise, and high headroom. Careful circuit design and rugged components ensure long, reliable operation. A wide range of applications can be supported, including sports and entertainment TV and radio events, streaming broadcasts, corporate and government AV installations, and post-production facilities.

Dante Audio-over-Ethernet

Audio data is sent to and received from the Model 370A using the Dante audio-over-Ethernet media networking technology. As a Dante-compliant device, the Model 370A's two audio output (Dante transmitter) and two audio input (Dante receiver) channels can be interconnected (routed)

with other devices using the Dante Controller software application. The Dante transmitter and receiver channels are limited to supporting four Dante flows, two in each direction. The digital audio's bit depth is up to 24 with a sampling rate of 48 kHz. The Model 370A is AES67 compatible and compliant with the Dante Domain Manager™ software application.

Two bi-color LEDs provide an indication of the Dante connection status. The Dante Controller's *Identify* command takes on a unique role with the Model 370A. Not only will it cause the talk and call button LEDs to light in a unique highly visible sequence, it can also be configured to turn off any active talk channels.

Audio Quality

The Model 370A's completely "pro" performance is counter to the less-than-stellar reputation of typical party-line (PL) intercom audio. A low-noise, wide dynamic-range microphone preamplifier and associated voltage-controlled-amplifier (VCA) dynamics controller (compressor) ensures that microphone audio quality is preserved while minimizing the chance of signal overload. DC power to support electret microphones can be enabled if necessary. The output of the microphone preamp and compressor is routed to an analog-to-digital converter (ADC) section that supports a sampling rate of 48 kHz with a bit depth of up to 24. The audio signal, now in the digital domain, travels through the processor and on to the Dante interface section where it is packetized and prepared for transport over Ethernet.

Audio input signals arrive via two Dante receiver channels. The supported sampling rate is 48 kHz with a bit depth of up to 24. The audio signals pass into the Model 370A's processor where channel routing, headphone level control, and sidetone creation are performed within the digital domain. This provides flexibility, allowing precise control of the audio signals and eliminating the need for the two rotary level controls from having to directly handle analog audio signals. The audio signals destined for the 2-channel headphone output are sent to a high-performance digital-to-analog converter and then on to robust driver circuitry. High signal levels can be provided to a variety of headsets, headphones, and earpieces.

Call Function

A call function allows Model 370A users to send and receive channel-specific visual alert signals. Pressing the call pushbutton on the top of the unit is all that's required to signal other users that attention is requested. Using 20 kHz tones, the call signals are sent within the audio channels ("in band") allowing interoperability between multiple Model 370A units as well as being compatible with legacy party-line intercom systems. Call signals can be useful to indicate to users that they are needed "on headset" or should be actively listening to an intercom channel. The call function can also be used to provide real-time cues to production personnel during the running of live events.

Configuration Flexibility

A highlight of the Model 370A is its ability to be easily configured to meet the needs of specific users and applications. All configuration choices are made using the STcontroller software application that communicates with the Model 370A by way of an Ethernet network connection. Configurable parameters include microphone power and preamplifier gain, sidetone audio operation, talk button operation, and headphone monitoring.

The microphone input can be selected for compatibility with dynamic or elected (DC-powered) microphones. The gain of the microphone preamplifier can be selected from among four choices. These allow compatibility with the variety of microphones that are part of broadcast and intercom headsets.

A unique Model 370A feature is the ability to individually configure the way in which the two talk pushbutton switches function; four choices are available. For standard intercom beltpack operation it's typical to select *Push to Talk*, *Latching*, or *Push to Talk/Tap to Latch*. For situations where only monitoring of an intercom channel is desired a *Disabled* mode is available.

Two audio channels arrive via Dante and are destined for the 2-channel headphone output. Each input source can be independently routed to the left headphone channel, right headphone channel, or both the left and right headphone channels. This flexibility allows a variety of listening environments to be created, including stereo, single-channel monaural, and dual-channel monaural.

Ethernet Data and PoE

The Model 370A connects to an Ethernet data network using a standard 100 Mb/s twisted-pair Ethernet interface. The physical interconnection is made by way of a Neutrik® etherCON RJ45 receptacle. While compatible with standard RJ45 plugs, etherCON allows a ruggedized and locking interconnection for harsh or high-reliability environments. An LED displays the status of the network connection.

The Model 370A's operating power is provided by way of the Ethernet interface using the 802.3af Power-over-Ethernet (PoE) standard. This allows fast and efficient interconnection with the associated data network. To support PoE power management, the Model 370A's PoE interface reports to the power sourcing equipment (PSE) that it's a class 1 (very low power) device.

Future Capabilities and Firmware Updating

The Model 370A was designed such that its capabilities and performance can be enhanced in the future. A USB connector, located on the unit's main circuit board (underneath the unit's cover), allows the application firmware (embedded software) to be updated using a USB flash drive.

The Model 370A uses Audinate's Ultimo™ integrated circuit to implement the Dante interface. The firmware in this integrated circuit can be updated via the Ethernet connection, helping to ensure that its capabilities remain up to date.

Model 370A Specifications

Power Source:
Power-over-Ethernet (PoE): class 1 (very low power, ≤3.84 watts) per IEEE® 802.3af

Network Audio Technology:
Type: Dante audio-over-Ethernet
AES67-2013 Support: yes
Dante Domain Manager (DDM) Support: yes
Bit Depth: up to 24
Sample Rate: 48 kHz
Number of Transmitter (Output) Channels: 2
Number of Receiver (Input) Channels: 2
Dante Audio Flows: 4; 2 transmitter, 2 receiver

Network Interface:
Type: 100BASE-TX, twisted-pair Ethernet, Power-over-Ethernet (PoE) supported
Data Rate: 100 Mb/s (10 Mb/s and 1000 Mb/s Ethernet not supported)

Audio Channels: 2 talk, 2 listen

Microphone Input:
Compatibility: dynamic or electret (low-voltage DC-powered) microphones
Type: unbalanced
Electret Microphone Power: 3.3 volts DC via 2.00 k resistor, selectable on/off
Gain: 22, 30, 42, or 48 dB, selectable, ref. –60 dBu input to Dante output (–20 dBFS nominal)
Frequency Response: 50 Hz to 10 kHz, –3 dB
Distortion (THD+N): <0.02%
Noise Floor: –95 dBFS (A-weighted)

Compressor:
Threshold: 1 dB above nominal level (–19 dBFS)
Slope: 2:1
Status LED: compressor active

Headphone Output:
Type: 2-channel
Compatibility: intended for connection to stereo (dual-channel) or monaural (single-channel) headsets with nominal impedance of 50 ohms or greater
Maximum Output Voltage: 3.8 Vrms, 1 kHz, 150 ohm load
Frequency Response: 20 Hz to 10 kHz, –3 dB
Distortion (THD+N): <0.002%
Dynamic Range: >100 dB

Call Function:
Signaling Method: 20 kHz, ±800 Hz, within audio channels
Call Send Level: –20 dBFS
Call Receive Level: –27 dBFS minimum

Connectors:
Headset: 5-pin female XLR
Ethernet: Neutrik NE8FBH etherCON RJ45 receptacle
USB: type A receptacle (located inside Model 370A's enclosure and used only for application firmware updates)

Configuration: requires Studio Technologies STcontroller software application

Environmental:
Operating Temperature: 0 to 50 degrees C (32 to 122 degrees F)
Storage Temperature: –40 to 70 degrees C (–40 to 158 degrees F)
Humidity: 5 to 95%, non-condensing
Altitude: not characterized

Dimensions (Overall):
3.6 inches wide (9.2 cm)
1.6 inches high (4.0 cm)
4.8 inches deep (12.6 cm)

Mounting Options: intended for portable applications; contains integral belt clip; optional MBK-01 Mounting Bracket Kit allows Model 370A to be permanently mounted

Weight: 0.6 pounds (0.3 kg)

Specifications subject to change without notice.

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