aci707

audio-technica

Ultra Wideband (UWB) Wireless Audio Control Interface

Features

- **Ultra Wideband (UWB) operation**
- **Supports up to 7 microphone transmitters**
- **Two units can be interconnected for increased capacity**
- **Can be remotely located from digital receiver module**
- **"Global" configuration switches**
- **Inherent security (TRANSEC: Transmission Security)**
- **Encryption available (COMSEC: Communication security)**
- **Phoenix-type connectors**
- **Selectable mic-or line-level output**
- **Front panel LED indicators (Link, Mute, Closure, Output, Power, Encryption)**
- **External contact closure inputs and outputs**
- **Single rack space mounting**
- **Integral universal power supply**

Description

The Audio Control Interface (aci707) serves as the connection point between the SpectraPulse® Digital Receiver Module and external audio equipment as well as a control platform to set the system functions. It also provides control interface points (contact closures) for interfacing to other external equipment. Each aci707 will support up to seven microphone transmitter audio channels (outputs); two aci707's can be linked together to increase the system capacity to 14 microphone transmitters. SpectraPulse® is a wireless microphone system utilizing ultra wideband (UWB) pulse technology. The system operates in the 6 GHz band to deliver clear, intelligible audio with none of the performance and set-up issues associated with conventional RF wireless microphones. SpectraPulse® operates using a completely digital signal path with imperceptible latency and no companders or compression, providing excellent audio quality.

The aci707 is connected to the digital receiver module (drm141) via a single shielded Cat 5 cable. The aci707 supplies power to the drm141 via this cable and receives digital streaming audio from the drm141. The cable length can be up to 333 feet (100 m). A link-out connection on the aci707 allows a second aci707 to be connected together for increased capacity. (Each aci707 includes an 8" shielded Cat 5 type jumper cable.)

Seven individual audio outputs are provided on the aci707 (one per microphone transmitter). These outputs can be globally selected between mic or line level via a rear panel DIP switch. DIP switches are also provided to configure the operation of the touch button on the mtu101/201's. Settings include: Push On/Off, Push-to-Talk, Push-to-Mute and "disable". The audio output can be set at the aci707 to operate independently from the contact closure and mtu push button for applications that require "downstream control" or use with Acoustic Echo Cancellers (AEC units). All connections use standard Phoenix-type block connectors supplied with the unit. Output contact closures follow the "mic pushbutton control" DIP switch settings. Input contact closures allow an external device to "force mute" an mtu101 and/or mtu201 regardless of the state of its soft-touch button. Front panel LEDs for each channel indicate: link status, mute, closure active and low battery. Additional LEDs are provided for: Power, Encryption Enabled, Mic or Line level output. A front panel RS232 encryption port allows the user to digitally encrypt the audio signal with an AES level 3, 128-bit key via an optional software package.

The aci707 includes integral rack ears and is designed to mount in a standard 19" equipment rack occupying a single rack unit (RU). A built-in universal power supply with IEC connector is designed for worldwide use.

A SpectraPulse® system consists of a Digital Receiver Module (drm141), up to 14 Microphone Transmitter Units/Desk Stand Units (mtu101 and/or mtu201) and up to two Audio Control Interfaces (aci707). The system will support up to 14 simultaneous audio channels. An optional seven-space Charging Encryption Station (cei007) and NiMH batteries are available along with System Encryption Package (sep128) software for digitally encrypting the microphone output.

Architect's and Engineer's Specifications

The audio control interface shall be part of a wireless microphone system operating in the 6 GHz band using Ultra Wideband timed pulse technology with a pulse duration of 2 nanoseconds and a UWB rate of 8 mbps. It shall receive streaming digital audio and control signals from an associated digital receiver module. Systems using conventional carrier-based RF or spread-spectrum methods of transmission shall be unacceptable. Each audio control interface will support up to seven microphone transmitters and it shall be possible to link two units together to expand system capacity to fourteen channels (microphone transmitters) without the need for frequency coordination, scanning, or preset frequency groupings. The system shall operate using TDMA methodology with a 1 ms frame length and 15 time slots per frame. The audio path shall be entirely digital with no compression or companders and the overall latency shall be less than 1.2 ms. Audio response shall be from 100 Hz to 12,000 Hz, with a sampling rate of 24 kHz and 16 bit AD/DA converters. The system shall be inherently secure with a very low probability of transmission detection. For increased security, an AES level 3, 128 bit digital encryption software with a user-controlled programmable key shall be available. Assigning the key shall be via an RS232 port on the front of the audio control interface. The audio control interface shall connect to a digital receiver module via a single shielded Cat 5 cable to allow for remote operation. Connections for this cable shall utilize standard RJ45 connectors. It shall be possible to extend the length of this cable to 333 feet (100 m) with no signal degradation. Power for the digital receiver module shall be provided from the audio control interface. The audio control interface shall provide visual indication of power, link status, mic/line level, microphone transmitter mute, contact closure status and microphone transmitter low battery. Connections to the audio control interface shall be via Phoenix-type connectors. Control input and output connections shall be provided to interface the system to other equipment. It shall be possible to isolate the microphone audio from the mute/closure function for use with AEC and other systems without rewiring. All configuration and user controls (except for the power switch) shall be located on the rear panel of the unit. The audio control interface shall be designed to mount in a standard 19" equipment rack and shall occupy only 1 RU of rack space. The rack mount shall be integral to the audio control interface. The interface shall operate on 100–240V, 50/60 Hz AC power with an internal power supply. All components shall comply with RoHs standards.

The audio control interface shall be an Audio-Technica aci707 or equivalent.

System Block Diagram

aci707
Audio Control Interface (up to two)

drm141
Digital Receiver Module

mtu101/mtu201
Microphone and Desk Stand Transmitter Units

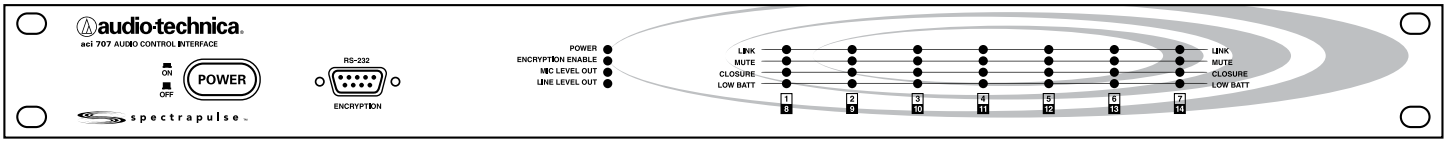
Each aci707 provides up to seven audio outputs.

Specifications

Frequency range	6.100 GHz – 6.600 GHz
Center frequency	6.350 GHz
AD/DA	16 bits
Clock	24.576 MHz
Sampling rate	24 KHz
Pulse duration	2 nanoseconds
Frame length	1 ms
Time slots per frame	15
UWB rate	8 mbps
Compression	None
Companding	None
Latency	1.1 ms
Average RF power	40 nanowatts
Sync/Re-acquisition time	<3 ms
Range	23 m (75')
Simultaneous channels	14
Front panel LEDs	Power, Encryption, Mic level, Line level
Channel LEDs	Link, Mute, Closure, Low Battery
Contact closures (output)	1 per channel, follows mic button dipswitch settings
Contact closures (input)	1 per channel, force mute
Mains (aci707)	100–240V, 50/60 Hz RoHS-compliant power supply
Accessories included	IEC power cable; seven 3-pin Phoenix-type connectors (audio outputs); two 8-pin Phoenix-type connectors (control i/o connections); 8" shielded Cat 5 cable with RJ45 connectors (for linking two aci707 units together)

Specifications are subject to change without notice.

front



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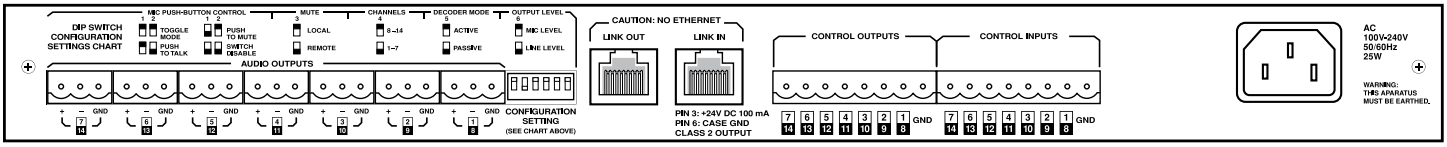

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