# mtu101

# **(A)** audio-technica

Ultra Wideband Wireless Boundary Microphone Transmitter Unit

SpectraPulse® ultra wideband (uwb) wireless systems



#### **Features**

- Ultra Wideband (UWB) operation
- Easy to set up and operate
- Simple channel address selection
- · Excellent audio quality
- · Inherently secure transmission
- · Configurable soft-touch mute button
- LED status indicators (power, low battery, link, mute)
- Operates on 2 AA batteries (NiMH or Alkaline)
- Immune to multipath interference
- · Integral charging encryption contacts
- Heavy-duty robust construction
- Optional rechargeable batteries and charging/encryption station

#### **Description**

The mtu101 is a boundary-style microphone transmitter unit designed to operate as part of a SpectraPulse® wireless microphone system utilizing ultra wideband (UWB) pulse technology operating in the 6 GHz band. Up to 14 Microphone Transmitter Units can be used in a SpectraPulse® system. Channel selection is accomplished by simply setting an address selector on each mtu101 to a different address without the need for frequency scanning, hunting or other frequency-coordination processes. The RF output signal from the mtu101 is time-based rather than frequency-based, making a SpectraPulse® system immune from multipath issues, dropouts and sputters. SpectraPulse® operates using a completely digital signal path with imperceptible latency and no companders or compression, providing excellent audio quality.

A soft-touch button that can be globally configured for push On/Off, push-to-mute, or push-to-talk operation is provided on the mtu101. All muting is silent. LED indicators are provided to show mute status, power, low battery and link. The microphone capsule used in the mtu101 is a unidirectional condenser and incorporates Audio-Technica UniGuard® technology for immunity from RF interference.

Each mtu101 operates using 2 AA batteries. Standard alkaline or NiMH rechargeable batteries can be used. With NiMH batteries, up to nine hours of operation are possible using a fully charged set. Charging contacts on the base of the mtu101 allow it to be dropped into a charging/encryption interface. Recharge time for depleted batteries is typically six hours.

The mtu101's output signal is inherently secure in operation since the UWB data is transmitted in extremely short-duration pulses sent in a timed sequence over a very wide (500 MHz) frequency spectrum. To decode the pulse streams, the system must know exactly when, where and how to listen for them, providing a very low probability of detection (TRANSEC – Transmission Security). For applications requiring

additional levels of security, an optional encryption package that meets the AES 128-bit encryption standard developed by the U.S. government for securing sensitive material is available. (COMSEC – Communications Security)

A SpectraPulse® system consists of a Digital Receiver Module (drm141), up to 14 Microphone Transmitter Units/Desk Stand Transmitters (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.

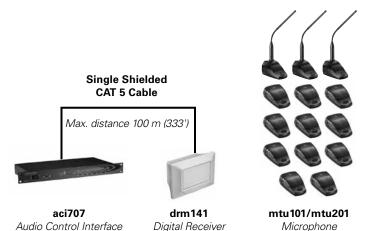
### **Architect's and Engineer's Specifications**

The wireless boundary microphone transmitter shall operate in the 6 GHz band using Ultra Wideband timed pulse technology with pulse duration of 2 nanoseconds and a UWB rate of 8 mbps as part of a complete SpectraPulse® system. Transmitters using conventional carrier-based RF or spread-spectrum methods of transmission shall be unacceptable. Up to 14 microphone transmitters shall be able to be used simultaneously in a single system. The microphone transmitter shall incorporate a simple address/channel selector switch for address assignment, without the need for frequency coordination, scanning, or preset frequency groupings. Average RF power shall be 40 nanowatts. The microphone transmitter's audio output shall be entirely digital with no compression or companders, and the overall system 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 output signal from the microphone transmitter shall be inherently secure with a very low probability of transmission detection. For increased security, the transmitter can be encrypted with an AES level 3, 128 bit digital encryption key via a user-controlled software application. Each microphone transmitter shall be equipped with a configurable touch button. This button shall be capable of operating in one of the following modes: Push On/Off, Push to Mute, Push to Talk. It shall be possible to isolate the microphone's audio from the mute/closure function for use with AEC and other systems without rewiring. Mute functions shall be silent. Each microphone transmitter shall incorporate LED indicators for: power, low battery, link present and mute status (mic active). The microphone transmitter shall be a boundary configuration with an RFshielded unidirectional microphone. It shall be capable of operating with standard AA alkaline or NiMH batteries. When using NiMH batteries, it shall be possible to operate the transmitter for 9 hours. Battery changeout shall not require any tools or special techniques. Contacts shall be provided on the base of the microphone transmitter allowing it to drop into a charging/encryption station. The construction of the microphone transmitter shall be cast metal with plastic trim. LED indicators on the microphone transmitter shall be blue. The base plate of the microphone transmitter shall be equipped with feet that will not mar or leave marks on tables or other surfaces. All components shall comply with RoHS standards.

The microphone transmitter shall be an Audio-Technica mtu101 microphone transmitter unit or equivalent.

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## **System Block Diagram**



Module

and Desk Stand

Transmitter Units

Each aci707 provides up to seven audio outputs.

### **Battery Compartment Detail**

(up to two)



### **Bottom Detail**



### **Specifications**

Overall system 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 Mains (aci707) 100-240V, 50/60 Hz RoHs-compliant power supply

Transmitter unit Microphone element Fixed-charge back plate, permanently polarized condenser Polar pattern Unidirectional Battery life Approximately 9 hours, depending on battery type and use pattern Current consumption 135 mA Frequency response 100-12,000 Hz LED indicators Power, Mute, Link Configurable button, Push On/Off, Push to Talk, Push to Mute **Switches** Power, address/channel, control button Two AA Alkaline batteries for set up Accessories included (per mtu)

Specifications are subject to change without notice.

