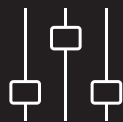


/ Cerritos College | Norwalk, California

Upgraded AV Systems for Remote and Hybrid Learning



Beamforming Microphone Array
(ATND1061DAN)



Digital Microphone Manager
Software (ATND1061DAN)



UHF Operation
(3000 Series)



IR Sync and Scan
(3000 Series)

- **Industry:** Education
- **Location:** Norwalk, California
- **Client:** Cerritos College
- **Project:** Install audio and visual infrastructure in existing classrooms – 16 in total – to better facilitate communication between instructors and both in-person and remote students.
- **Project participants:** Audio-Technica, [Golden Star Technology, Inc. \(GST\)](#), [Cerritos College](#)
- **Solution:** [Audio-Technica ATND1061DAN Beamforming Ceiling Array Microphones](#) and [3000 Series Wireless Systems](#)



/ A Los Angeles County Community College
The Client



Founded in 1955, Cerritos College is one of the top community colleges in Los Angeles County. The school offers comprehensive, high-quality, affordable education and career training. One of the five largest community colleges in Los Angeles County, Cerritos College occupies 135 acres located in the City of Norwalk. It averages 22,000 students annually who participate in over 180 areas of study and 87 degree and certificate programs.

/ To design a “high-flex” system that would enable remote and hybrid learning as well as enhance the in-person experience
The Challenge

Fueled by the Covid-era need for distance learning capabilities in classrooms with dated AV infrastructure, Cerritos College needed to upgrade and update its facilities. The college approached local integrator Golden Star Technology, Inc. (GST), the school’s AV provider for more than a quarter century, to design a “high-flex” system that would enable remote and hybrid learning as well as enhance in-person education and accommodate room use for meetings with remote participants.

“While working to determine what our faculty needed and wanted,” says Patrick O’Donnell, a director of Information Technology at the college, whose department manages the school’s AV systems, “we touched base with GST and made field trips to look at what other facilities were doing – UC Irvine, Cal State Long Beach – and internally made some decisions based on the things we liked about each one. Ken [Peterson, GST’s senior AV solutions architect] meshed what we had seen, what we were looking for, and ideas from our team and staff, and came up with a solution.”

“With the ceiling array microphones in the classroom, the instructor can be walking around while talking and their voice is picked up.”

— Patrick O’Donnell
Director of Information Technology
Cerritos College

/ Audio-Technica ATND1061DAN Beamforming Ceiling Array
Microphone and 3000 Series Wireless Systems
The Solution

GST designed and implemented a fully integrated system that completely replaced the audio-visual systems in 16 classroom spaces (so far).

Two Audio-Technica beamforming ceiling-array microphones capture the voices of the instructors and in-person students “strictly for the far-end participants,” says GST’s Peterson. “And there’s an array of ceiling speakers in the room through which the far-end participants are heard from. There are also two Audio-Technica traditional wireless microphones that can be used for online participants to hear the instructor. There are three cameras: one in the rear to capture the presenter, one wide angle camera in the front to capture all the students and there’s also a whiteboard camera. All the cameras are fed into the classroom computer via USB and users can choose which camera or cameras to be active via the Zoom interface.”



Audio-Technica ATND1061DAN Ceiling Array Microphone

“The ceiling microphones,” Peterson continues, “are fed via Dante into an Extron audio processor, which also accepts the analog outputs of the traditional wireless microphones and any program audio. The processor sends the instructor’s mic and program audio to the ceiling speakers as needed. The audio processor also has a USB connection that goes to the PC to provide the audio that the far-end participants hear, and to bring audio contributions from the far-end participants into the classroom speakers.

There are two projectors so they can present in an extended desktop type of format. They could have talking heads on one screen and the presentation on another screen, for instance. There’s also a confidence monitor so the instructor can see what’s going on without having to look behind them. An Extron

controller is used to turn the system on and off, route the sources, control the volume, et cetera.”



The Installation

Qty: 2 (per classroom)

Qty: 1 (per classroom)

Qty: 1 (per classroom)

Extron DMP 64 Plus audio processor, Extron IPCP Pro centralized AV Controller, AVer PTZ tracking USB camera, Huddly USB camera with USB to POE adapters, Video monitors and projectors, motorized screens, HDMI switch, POE Ethernet switch, computer, HDMI extender sets, ceiling speakers. *The audio chain diagram indicates basic setup.*





/ Multiple beamforming ceiling array microphones and wireless microphones with body-pack and lavalier mic

The Technologies

O'Donnell says the flexibility of the Audio-Technica ATND1061DAN mic array is a boon for the instructors, "With the ceiling array microphones in the classroom, the instructor can be walking around while talking and their voice is picked up. Also, the mics pick up even the students very well. That was what we were looking to solve. "The mic array's pickup zones allow prioritized tracking of the instructors withing a designated zone, complimented by the PTZ camera's human shape tracking for visual continuity. Additional zoned coverage ensures that the student participants' voices are captured. The addition of the 3000 Series, for those attending virtually, completes the comprehensive, hybrid approach — addressing both in-person students and online attendees.



The ATND1061 has six individual output channels, which, collectively, can be configured with up to 32 user-defined microphone pickup zones, providing the flexibility to cover a wide variety of room sizes and meeting types. Room configuration, zone setup, and other settings are handled through the user-friendly Digital Microphone Manager software application. Across all the output channels, the microphone's 90-degree orthogonal beams are capable of focusing on a particular point in space, preventing the pickup of unwanted noise. Proprietary voice activity detection (VAD) technology enables the microphone to discern between a voice and unwanted noises such as paper shuffling.



Each ATND1061's Output Channel 1 can be configured with 16 user-defined Coverage Zones, and the pickup beam will track and keep the microphone focused on the voice of a speaker, whether they are stationary or moving about within the zone. Coverage Zones can be helpful in picking up either non-priority or unplanned participants.

Output Channels 2–6 can be configured with 16 user-defined Priority Zones to ensure priority is given to participants in a room's known participant locations, whether the participants are stationary or moving about.

Exclusion zones can be set to avoid known sources of unwanted noise (such as air-handling systems).

For conventional hands-free voice reinforcement, Cerritos College installed pairs of Audio-Technica ATW-3211/831DE2 wireless microphones with body-pack transmitters and lavalier mics in each classroom. The fourth-generation A-T 3000 Series wireless systems provide the power and flexibility to operate within today's congested and diminished UHF spectrum. 3000 Series systems have an operating range of 300 feet (100 m) and provide a class-leading 60 MHz tuning range across two available frequency bands — DE2 (470–530 MHz) and EE1 (530–590 MHz).



Audio-Technica 3000 Series Wireless System



RF spectrum can be easily scanned and available frequencies selected on the receiver and then synced with the transmitter via IR sync functionality. A backup frequency can also be assigned for a quick swap, triggered from the transmitter in the event of unexpected interference.



The ATW-T3201 body-pack transmitter is equipped with Audio-Technica's new rugged cH-style screw-down 4-pin connector for secure microphone and cable connections. AT831cH cardioid condenser clip-on lavalier microphone provides crisp, full-sounding voice pickup and offers excellent gain before feedback and suppression of background noise. The mic comes with a windscreen and clothing clip.

Important features that influenced their technology choice for this project include:

- Hands-free microphone operation
- Automatic speaker tracking within prioritizable zones
- Dante integration
- Accommodates rooms of various sizes
- Accommodates hybrid instruction and meetings
- Ease of operation

“Every bit as good as competing products that cost up to twice as much.”

— Ken Peterson
Senior AV Solutions Architect
Golden Star Technology, Inc.

/ Improved audio quality and transparency for both in-person and remote participants

The Impact

The system has provided improved audio quality and transparency for both in-person and remote participants for instruction and meeting. The college has been highly satisfied with the performance and support provided by Audio-Technica and GST throughout the project. The Audio-Technica solutions are vital components of an integrated system design that has been duplicated across a host of classrooms of various sizes facilitating easy transitions for faculty and staff as they move between campus spaces.

Cerritos College integrated classroom AV systems:

- Feature hands-free operation that allows speaker mobility
- Use digital networking for flexible interface with simplified cabling
- Seamlessly integrate remote participants into classes and meetings
- Deliver clear and highly intelligible microphone coverage of all participants
- Require minimal training and operational knowledge

Javier Banuelos, a Cerritos College IT department manager who handles AV infrastructure day-to-day, notes that the ATND1061 microphone arrays “seem to be very sensitive and they do a lot of the lifting without the speaker having to wear a microphone. I like that — no fuss and ease of operation.” Also from the IT department's perspective, O'Connell notes that, “Each rack runs all these devices on its own network switch that is not on our IT network,” which solves a host of problems that can occur when blending AV and information networks. “Each room is pretty much an island, effectively,” adds Banuelos.

When asked if Cerritos College achieved their goals for sound quality and system performance, Banuelos replies, “Yes, and yes.” GST's Peterson adds that the A-T ceiling mics “are every bit as good as competing products that cost up to twice as much. The college is very, very impressed with them.” Audio-Technica, says Peterson, has been “very helpful. We've known Matthew Jensen (Audio-Technica Territory Manager for Southern California and Hawaii) for a long time. He's been very supportive all the way through.” Tamela Reid, a senior account manager at GST, adds, “Audio-Technica was very supportive in getting us product. That is an important component as well, helping us escalate and understand our schedule and its urgency.”

The Cerritos College AV upgrades were first discussed in 2021 with rooms coming online from 2022 into 2024. The school has three more rooms coming online in 2025.

For a high-performance, easy-to-use microphone solution for meeting spaces, check out [Audio-Technica's ATND1061 Beamforming Ceiling Array Microphone](#).