

## PRODUCT AND APPLICATIONS BULLETIN

FILE: Section 4 [Applications]

PRODUCTS: AudiaFLEX - Audia® Digital Audio Platform  
AudiaEXPI - Audia Input Expander  
MCA8150 - Multi-Channel Amplifier

**APPLICATION:** Training Room with automatic mixing and mix-minus loudspeaker outputs.

### REQUIREMENTS:

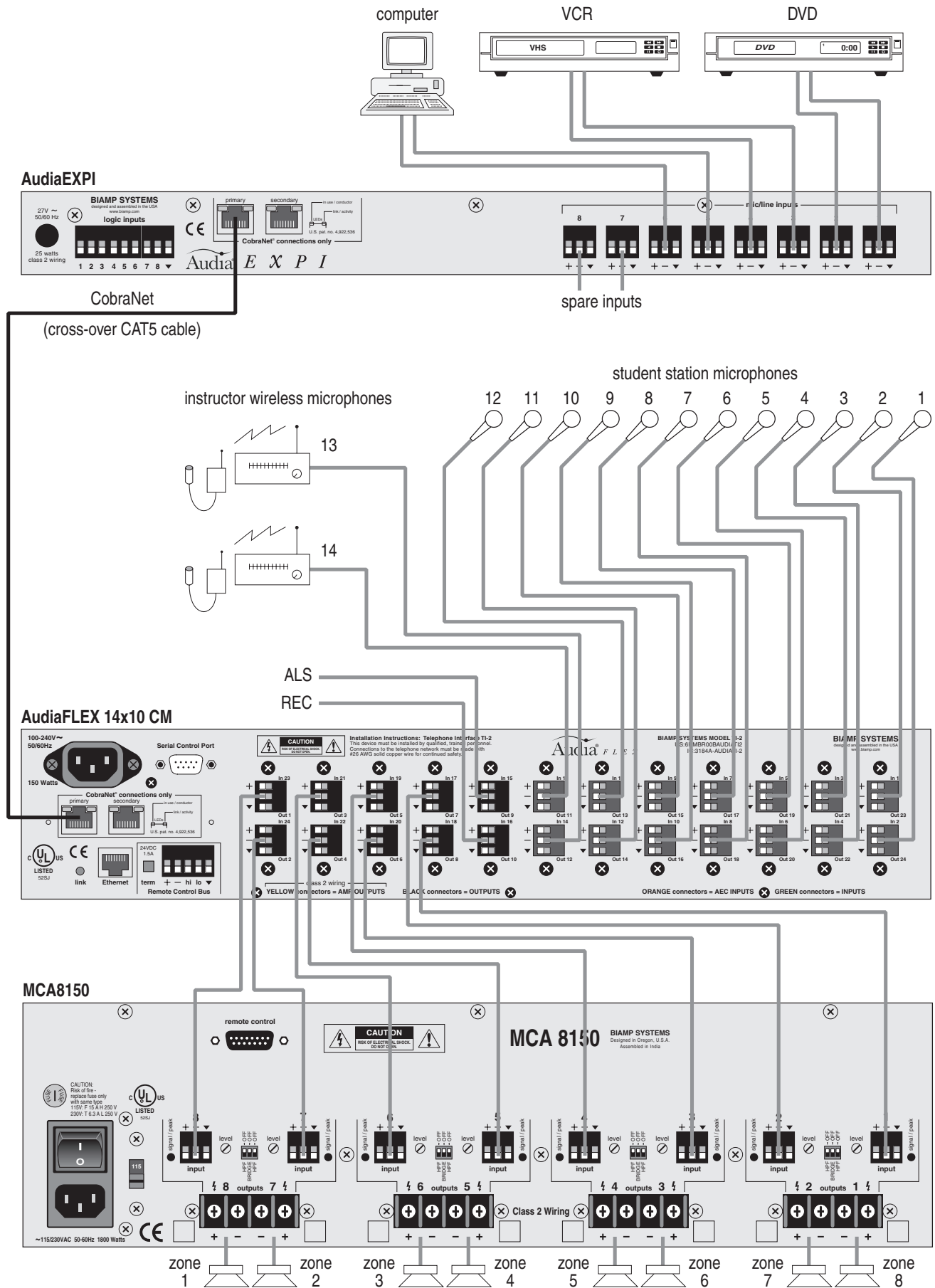
- Automatic mixing of microphones for two instructors and twelve student stations
- Auxiliary inputs for stereo sources such as DVD, VCR, and computer audio
- Mix-minus outputs for sound reinforcement in eight ceiling speaker zones

### PRODUCT OVERVIEW:

AudiaFLEX is an expanded version of Audia, the benchmark in digital audio systems. AudiaFLEX provides the same easy-to-use software and functional algorithms, but with greater flexibility in the choice of I/O configurations. Inputs and outputs may be specified by pairs, in any combination, up to a total of 24. All possible I/O configurations are available with or without CobraNet®, for networked or stand-alone applications. Intuitive software provides audio system design via PC computer, and allows easy selection, viewing, and calibration of numerous audio components: mixers, combiners, matrixes, equalizers, filters, crossovers, dynamics, routers, delays, remote controls, meters, generators, diagnostics, etc. Once a system design is compiled, it is downloaded into AudiaFLEX, where it can then be controlled via AMX® / Crestron®, via computer, or via dedicated Audia remote control panels.

AudiaEXPI is an input expander, which accepts eight mic/line analog audio inputs and provides eight channels of digital audio output via CobraNet. AudiaEXPI can simply add inputs to a centralized Audia system, or it can extend system boundaries by providing inputs in remote locations. AudiaEXPI is represented as a block in Audia software, for easy inclusion into any system design. AudiaEXPI may also be used to provide inputs to other CobraNet compliant systems or devices.

The MCA8150 is an 8-channel amplifier, providing 150 watts of power per channel into a 4 ohm load. Remote level control connections are provided, and channels may be bridged in pairs for more power. Optional transformers, for driving 25/70/100V distributed speaker systems, may be mounted internally.



## APPLICATION EXAMPLE:

This application describes the use of Audia in Biamp's own Learning Center. The system utilizes an AudiaFLEX 14x10 CM (*fourteen inputs, ten outputs, CobraNet*). CobraNet has been included to allow the use of an AudiaEXPI (*eight inputs*) for system expansion. An example system design, as created using Audia software, is shown on the back page.

Twelve student microphones and two instructor microphones are connected to inputs 1~14 of the AudiaFLEX unit. In the system design file, all microphones are fed through High Pass Filters, Levelers, and 2-Band Parametric Equalizers before entering an Auto Mixer (*14x1*). The Auto Mixer provides direct outputs from the individual channels, which are connected via Level Controls to a Matrix Mixer (*21x10*). The main output of the Auto Mixer is also connected in this way. Stereo inputs from DVD, VCR, and computer are connected to inputs 1~6 of an AudiaEXPI unit. These signals are then sent via CobraNet to the AudiaFLEX unit, where they pass through ganged stereo Level Controls and High Shelf & Low Shelf Filters on their way to the remaining inputs of the Matrix Mixer.

The Matrix Mixer output signals then pass through Level Controls, Parametric Equalizers, and Delays before arriving at the AudiaFLEX analog output connectors. AudiaFLEX outputs 1~8 are connected to the inputs of an MCA8150 multi-channel amplifier, which powers eight zones of ceiling speakers. The Zone 1 ceiling speaker is located above student microphones 1 & 2, the Zone 2 speaker is above student microphones 3 & 4, the Zone 3 speaker is above microphones 5 & 6, the Zone 4 speaker is above microphones 7 & 8, the Zone 5 speaker is above microphones 9 & 10, and the Zone 6 speaker is above microphones 11 & 12. The Zone 7 and Zone 8 speakers cover areas at the rear and side of the room.

**The Matrix Mixer is set up for mix-minus, with each student microphone attenuated by 6dB at the associated speaker output. All student microphones are sent without attenuation to the rear and side areas (Zones 7 & 8). The instructor microphones are sent without attenuation to all zones. In combination with automatic mixing, mix-minus allows for greater gain before feedback and provides an improvement in system intelligibility.**

The 'composite' main output of the Auto Mixer is routed (via the Matrix Mixer) only to the remaining two outputs (9 & 10) as auxiliary feeds for recording and assisted listening purposes. The stereo input signals from DVD, VCR, and computer are mixed to mono at all outputs.

Each of the microphone inputs employs a High Pass Filter to remove unwanted low frequencies, a Leveler to maintain consistent volume levels, and a 2-Band Parametric Equalizer for tonal balance. Each of the zone outputs employs a 3-Band Parametric Equalizer for room/speaker compensation, and a Delay for front-to-back signal alignment.

Meters and Level Controls have been strategically located throughout the system design, to allow for real-time monitoring and manual adjustment of signal levels whenever necessary. The design also incorporates multi-level password protection, allowing user access to these control dialogs without affording access to actual system design.

In the design file (see back page), Audio Pass Through (APT) components have been used solely to help organize the design layout diagram. To make the diagram fit on a single page, Split Pass Through (APT Link In/Out) blocks are effective. They provide 'wireless' connections, between the Matrix Mixer outputs and the subsequent Level Control block.

