

OLYMPIA



Digital Commentary System
Based on TITAN-BC 2000 D Router & Multiplexer



OVERVIEW

The AEQ digital Commentary Systems will make the host broadcasters tasks to accommodate the individual needs of the rights holding broadcasters and their commentators simple and seamless.

The Audio platform TITAN - BC 2000D router with the capacity of over 5000 x 5000 audio channels has been expanded and reinforced in order to comply with the largest broadcasting events in the World.

Having had the opportunity to run our systems in the most demanding environments that broadcast equipment can be exposed to, we are confident to say that we are able to provide a solution that suits most scenarios.

We can offer solutions to form part of broadcasters standard assets for production or turn-key equipment rental solutions for a single venue with a limited number of Commentary Positions or complex multi-venue systems with several hundred positions.

APPLICATIONS

For the last 15 years, AEQ has provided commentary audio solutions including Commentary Systems for the Worlds largest sporting events; Olympic Summer and Winter Games, Soccer World Cups, Athletics World and Continental Championships, Ice Hockey tournaments and International Basketball tournaments, just to mention a few. The system is however apt and has been used for other events such as world-class Motorsport events, Eurovision song contests, World summits, Elections, etc, etc.

The system can also be used for permanent installations where commentary services are provided on a regular basis and certainly as regular means of production for Radio and TV broadcasters, forming part of their equipment for outside broadcast.

REFERENCES

AEQ has a long list of past events with the predecessor to OLYMPIA. But even so, OLYMPIA has been used by the majority of the Worlds largest Broadcasters that have been rights holders at the latest international sport events; NBC, CTV-Rogers, Globo, Sky News, Televisa, Supersports, NHK, Asagim, SBS, CCTV, Sky NZ, Nine Networks, EBU, BBC, ARD/ZDF, RURTV, Sky Italia, Eurosports, France TV, Radio France...

HOW DOES THE SYSTEM WORK IN A SCENARIO OF A SINGLE VENUE

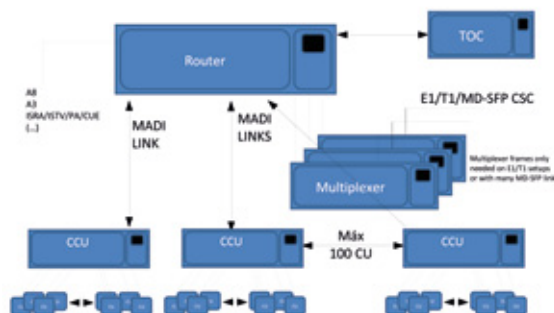
The AEQ commentary system is built with three basic system parts; Commentary Units with their corresponding headsets – the Commentator work space, the BC2000D system frames and Software applications for control and monitoring.

The BC2000D Frames allocates the different dedicated boards; system controllers, DSPs, digital and analog Inputs and Outputs, MADI multi-channel audiolinks, AoIP networking, monitoring and intercom and the Commentary Position control and power links.



Commentary Unit CU 20101

STANDARD VENUE



The most Basic SW application is a control and operation tool for the commentary position called Virtual CCU, but AEQ has SW applications for a wide array of scenarios and operational needs including Circuit Testing and AoIP Intercom systems.

The system is designed to be readily adapted to any operational requirement

The synoptic drawing shows a system that due to its size and physical distribution requires the BC2000D system frames to be distributed and interconnected with fiber-optic links; there is a central router several commentary position control frames, one dedicated frame for the Technical Operations Centre (TOC) from where the International sound, CUE and PA signals are distributed and a series of frames that are acting as E1/T1 audio multiplexers or dark-fiber Multi-channel transmission/distribution links. Smaller systems can easily allocate in one frame several if not all of the different functions required.

In very specific events, the commentary positions are installed on the stands or press zone at the corresponding sports venue, connected with a multi-channel link to the central frame (or frame set) installed in the technical area of the stadium. In occasional, small sized events, the frames will be installed inside the mobile unit displaced there.

The system can also be used in "off-tube" mode in fixed installations, in order to provide quality equipment and technical support services to the permanent commentary cabins installed inside sports stadiums.

HOW THE SYSTEM WORKS IN A LARGE EVENT

The complete system can provide fully redundant support to more than 1250 commentary positions distributed along more than 40 venues, routing the audio signals to the IBC through E1/T1 or high power dark-fiber links longer than 150km. That audio is then sent to each broadcaster room at the IBC (International Broadcasting Center) or the compounds, and in some instances can be taken through IP, ISDN or E1/T1 links to different broadcasters worldwide. All this functionality is integrated in a single redundant audio router that has been provided with a powerful intercom and IP audio monitoring system, as well as planning, supervision and real-time control tools.



BC2000 DF 3 equipped frame

SYSTEM COMPONENTS

Any TITAN – BC 2000D system component can be used to form a commentary system. The most specific parts are:

CU 2010 Digital commentary unit, with microphone and headphone connections for three commentators. Guest MIC/line input plus 2 auxiliary inputs and 1 auxiliary output. Receives digital audio and remote power from the BC2217 CU-LINK card. Sends audio to that card. Includes battery and local power supply connector.

BC 2000 DF-3 System chassis, 4U x 19" form factor, convection cooling, 16 rear slots for installing input and output modules. Two rear modules for BC2292 power supplies. 20 front slots for processing modules. For dense setups it must be installed together with BC 2000 FAN UP, BC 2000 FAN MIDDLE and/or BC 2000 FAN DOWN forced ventilation units.

BC 2292 Internal power supply module, 1x200W for BC 2000 DF-3. Auto voltage range. One BC 2000 DF-3 can be provided with up to 2 BC2290 modules for redundancy.

BC 2293 External power supply unit, 2U x 19". Includes two 800W modules. Auto redundant and auto voltage range. This unit is necessary when CU 2010 units are fed by the system.

BC 2240 Master control module for BC 2000 DF-3, with USB and Ethernet ports. Each rack needs at least one. Two of them can be installed for redundancy.

BC 2221 DSP Card. Audio processing and routing. Between 1 and 20 of these units are installed per rack, depending on the number of inputs and outputs, vu-meters and summing outputs. Linear audio processing and compression.

BC 2201 Analog input/output modules. 4 mono inputs and 4 mono outputs (2 stereo), electronically balanced, plus 4 general-purpose inputs and 4 general-purpose outputs.

BC 2202 AES/EBU digital input/output module. Four stereophonic inputs and four outputs in AES/EBU format (individually configurable as S/PDIF), transformer isolated. All inputs and outputs have sampling rate converters (SRC). Four GPI and four GPO. RJ 45 connectors.

BC 2209 Analog input/output module with 8 mono, electronically balanced, inputs and outputs

BC 2311 AES 10 MAD1 module for between-racks links. TX/RX, coaxial

and fiber-optic connection for 56 or 64 channels with clock extraction capability. Interchangeable fiber-optic cartridges for link distances up to 150km, basic one up to 2km. Two modules can be installed for the same link in order to achieve redundancy.

BC 2312 double AES 10 MAD1 module for between-racks links. TX/RX, coaxial and fiber-optic connection for 2x56 or 2x64 channels with clock extraction capability. Interchangeable fiber-optic cartridges for link distances up to 150km, basic one up to 2km. Two modules can be installed for the same link in order to achieve redundancy.

BC 2213 link module for 1016 audio channels. Fiber-optic connection: it is connected to TITAN for matrixes up to 5080x5080 channels

BC 2215 E1/T1/J1 communications module with RJ45/RJ48 interface for balanced pairs, with optical interface for SC and multimode fiber. Multiplexing function for audio matrix.

BC 2216 Ethernet communications module with RJ45 interface, compliant with IEEE802.3 standard, configurable for 10 base T / 100 base TX, half or full duplex.

BC 2217 "CU-LINK" module, audio/control link and remote power (48V) for two CU 2010 commentary units with RJ45 interfaces. Sends 8 and receives 6 digital audio channels from each CU.

BC 2219 IP audio input/output module at 100Mbps. Handles up to 20 bidirectional PCM or G722 audio channels. For intercom and monitoring. Also provides 4 analog audio outputs.

BC 2250 Front control panel with alphanumeric display, navigation keys and signalling LEDs for BC 2000 DF-3

TITAN BC2000 D matrix concentrator, forming a 5080x5080 audio channels router within 1U rack enclosure. It has 5 fiber-optic ports compatible with BC2213 card, connecting 1016x1016 channels sub-matrixes. Switching core, double power supply, double controller and hot-swap fans. For very large systems.

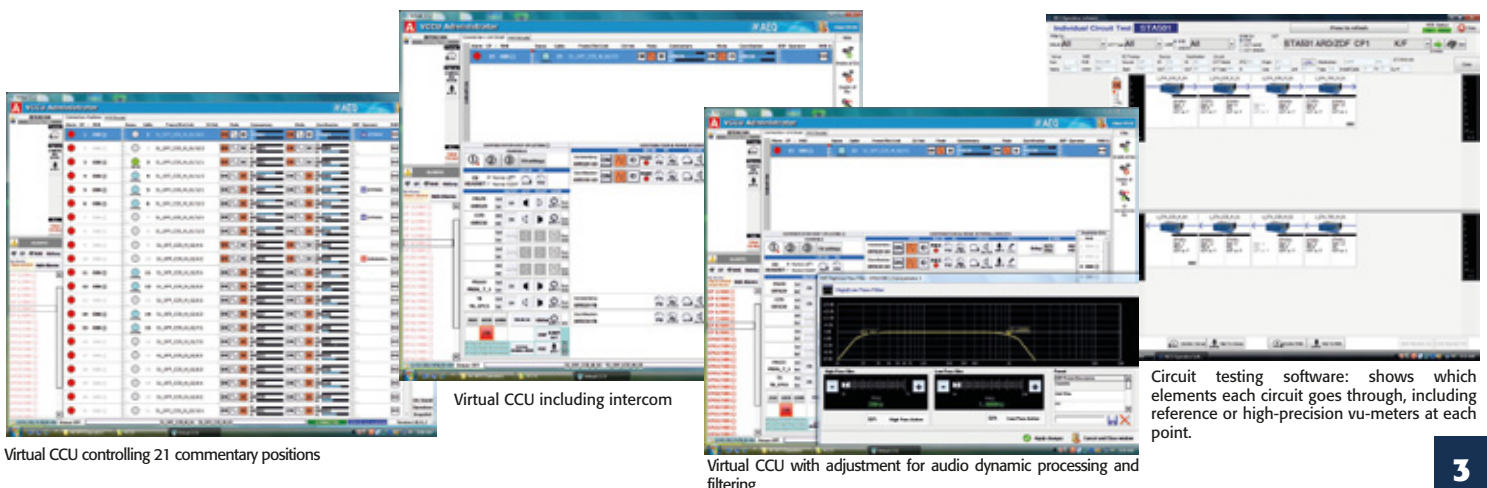
PC and SERVERS WITH PLANNING, CONTROL AND SUPERVISION APPLICATIONS

For CU control, circuits tests, IP intercom, and other specific ones.

Circuits test software: shows which elements each circuit goes through, including reference or precision VU-Meters at each point.

Virtual CCU, including intercom, filtering/dynamic processing and 21 Commentary Units under control.

CONTROL, INTERCOM AND TEST APPLICATIONS



Virtual CCU controlling 21 commentary positions

Virtual CCU including intercom

Virtual CCU with adjustment for audio dynamic processing and filtering

Circuit testing software: shows which elements each circuit goes through, including reference or high-precision vu-meters at each point.

COMMENTARY UNITS

Fully digital commentary consoles with inputs and outputs that are integrated into a completely redundant routing system based on TDM bus. They can be operated in "stand alone" mode ("off-tube" applications)

Local inputs and outputs: microphone and headphone connection for 3 commentators, guest MIC input and line input for an audio placer. Two auxiliary inputs and one auxiliary output.

Circuits sent to the system: program, coordination, technical talkback

Circuits received from the system: Each commentator can hear any circuit of the system that is configured to do so. By default: feedback, coordination, technical feedback, international sound, PA and CUE. It is possible to choose L, R or L+R and individually adjust the gain of each received circuit.

Intercom with the rest of commentators within the position, with the producer, studio or rightholder country. Contribution of international sound for radio and TV, stadium PA and auxiliary inputs for guidance or recordings playback.

Remote control and intercom by a supervisory operator in the CCR (Commentary Control Room).

Audio processing: low-pass and high-pass filters, dynamics processing with compressor, expander and delay for video sync. Incorporation of the auxiliary signals to the program circuits. Mixing of international sound for radio with automatic gain control (talk over). All audio circuits are 24 bits / 48KHz with low delay.

Power supply: Remote through the same data/audio cable, shielded CAT 5 AWG22 up to 300m long. Connector for local optional power supply. Backup battery, and selectable Phantom power supply for each microphone.

COMMENTARY SYSTEM

Automatic system planning and engineering with generation of equipment listing, interconnection procedures from a simple needs definition.

The CCR (Commentary Control Room) is provided with an application to control the status and configuration of each commentary position: open circuits, routing, processing, gains, monitoring... He can communicate with each user and monitor or talk to both go and feedback circuits within each position.

Test and call tones. Recording and playback of circuit identifiers.

A snapshot of the status of the whole system can be saved and retrieved on demand.

Different configurable supervision, control and operation right levels for operators and CCR managers.

Applications for testing components, pieces of equipment and circuits.

GENERAL SYSTEM

Based on a fully-redundant 5080 x 5080 circuits router, distributed in several nodes linked by fiber-optic, up to 1016 channels each.

Centralized synchronism.

Segregation of 64 MADI SPF channels with up to 150km distance transceivers interconnecting remote parts of the system.

Possibility of expansion of the system through audio multiplexing on E1/T1 links.

Intercom, remote audio measurement and monitoring through VoIP networks.

Automatic incidence resolution with failover and unattended auto-backup.

Automatic and manual circuit test, event planning and centralized management of alarms and operation incidences.

