

Wheatstone Commercial Audio iXO Digital Audio Platform

ARCHITECTS & ENGINEERS SPECIFICATION

The Digital Signal Processor shall be a stand-alone unit of four rack spaces, capable of providing a fully-functional system with a total of 32 inputs and 32 outputs configurable by analog and/or digital Input Cards and Output Cards in banks of 8, without the need for a dedicated, on-line PC.

The Digital Signal Processor Mainframe shall be of a front loading card cage design, with internal power supply. Fifteen universal card slots will accept any combination of Input, Output, Logic I/O, and DSP cards. All cards used in the universal slots shall be hot swappable. Systems whose input, output, logic, and DSP cards are not installed or removed from the front of the unit, or are not hot swappable shall not be acceptable. The unit shall provide a removable vented front-panel with no user-adjustable controls. Front panel LED indicators will provide monitoring of power, system, and network status. Analog / Digital and Digital / Analog conversion shall be by 24-bit A-D converters and 24-bit D-A converters to provide maximum operating headroom and performance. The Dynamic Range shall be 104dB minimum (20Hz-20KHz un-weighted), with a THD figure of less than 0.01%.

The system designer shall be provided complete flexibility in system configuration utilizing router based mixing and processing. System configuration and control software applications shall guide the system designer through hardware/card selection, and will automatically build the control graphical user interface.

The 8 channel analog Microphone/Line input card shall have balanced inputs, a remotely-adjustable gain stage prior to A/D conversion, and shall have channel-selectable 48 volt phantom power per input.

The AES digital input card shall allow four 75/110Ω AES/SPDIF connections.

The 8 channel analog Line output card shall have balanced outputs with a remotely-adjustable gain stage prior to D/A conversion.

The AES digital output card shall allow four 75/110Ω AES/SPDIF connections and a remotely-adjustable gain stage.

All audio Input and Output card connections are via modular, Phoenix style hardware.

Three DSP card types shall allow the system designer to create systems which are tailored for the specific requirements of the project. Each DSP card shall accommodate up to 32 audio channels. Any Input signal processing requirement shall be allocated to the DSP input processing card. Any mixing and/or automixing requirement shall be allocated to the DSP mix engine card. Any output signal processing or speaker processing shall be allocated to the DSP output processing card.

A programmable logic input/output card shall be able to be used in any universal card slot. It shall be possible to connect switches or control voltages to 16 control input ports enabling non-technical operators to change system presets or variable parameters. An additional 16 control output ports shall provide logic outputs for purposes of signal indication, external switching systems, or other similar system control applications. Two female DB-25 connectors will be used for logic card connectivity.

The Signal Processor shall also be fitted with an Audio Transport (AT) network interface that shall allow the unit to send and receive audio signals to and from other Wheatstone devices via a

dedicated Ethernet network over Category 5 cable. This network shall be terminated on RJ-45 and/or fiber optic SC connectors. Category 5 connections shall be stable over distances up to 100 meters between like units and/or a high capacity audio networking switch. The network shall allow system expansion at a later date through the addition of further mainframe systems. The AT network interface shall allow a maximum of 64 bi-directional channels plus control data.

There shall be the ability to expand the input, processing, mixing, and output capacity of the system by linking two units together via Category 5 or fiber optic cable. This unit shall be identical in networking capabilities as the main signal processor, and can feature different card configurations. Two units linked together will allow for a system capacity of 64 inputs and 64 outputs.

There shall be the ability to expand the input and output capacity by linking up to 48 64x64 systems using a 48 port audio networking switch, providing over 3000 inputs and 3000 outputs.

It shall also be possible to control and design the system network remotely using a PC connected into the system control Ethernet network.

An Ethernet and RS-232 port shall be provided to allow control of the unit from third party control systems such as Crestron or AMX. The Ethernet or RS232 port on any device shall provide access to all devices that are properly networked together.

System configuration shall be by a Personal Computer, which may be disconnected after configuration without affecting installed operation of the unit. System configurations shall be stored in each mainframe device, and these configurations shall not be limited by factory-only presets. It shall be possible to configure a number of system presets and events, which may be recalled at any time via the PC or external control devices.

The configuration and control software application shall provide viewing and control of audio processing objects for use in system designs based on the type and quantity of DSP cards used. They include, but are not restricted to: AGC, AEC, Automixers, Crossovers, Compressors, Gates, Delays, Duckers, Expanders, Limiters, Graphic Equalizers, Parametric Equalizers, Filters, Metering points, Mixers, Matrix Routers, Matrix Mixers, Source Matrices, Source Selectors, and Signal Generators. The software shall provide the facility to restrict end user accessible control panels by limiting attributes of the processing object parameter controls. Multi-level password-based security shall protect the integrity of the system.

Systems whose configuration software provides a DSP gauge to inform the designer as to the percentage of DSP usage are not acceptable. The system design software shall be compatible with Windows XP Home, Windows XP Professional and Windows 2000 operating systems.

To aid in system management, the software shall provide a method of event logging so that system diagnostics are available. This event log shall include failures, warnings and information notices, and shall display the time of the event occurrence, the device to which the event applies and the design file originally loaded.

There shall be available a programmable remote controller device with an 8 character LCD display. A rotary encoder for data selection, an Enter button for data acceptance, a rotary encoder for level adjustments with corresponding LED bar indicator, and a mute on/off switch. The remote control shall have the ability to be locked and unlocked via software or by system designer defined simultaneous encoder and switch press and hold sequence. The controller shall be available in single or dual configurations. The remote controller shall connect into the Ethernet control network with Category 5 cable. The controller receives power by using the connector on the rear, or with IEEE802.3af Power Over Ethernet (POE). The remote control shall be capable of being housed in a standard NEMA-style, 2-Gang junction back box with a 1/2" mud ring.

The Digital Signal Processor shall be the **Wheatstone Commercial Audio iXO-MF**.
The Microphone/Line Input card shall be the **Wheatstone Commercial Audio MLI-8**.
The Digital Input card shall be the **Wheatstone Commercial Audio DI-8**.
The analog Line Level Output card shall be the **Wheatstone Commercial Audio LO-8**.
The Digital Output card shall be the **Wheatstone Commercial Audio DO-8**.
The Logic I/O card shall be the **Wheatstone Commercial Audio LIO-32**.
The Input DSP card shall be the **Wheatstone Commercial Audio DSP-IP**.
The Mix DSP card shall be the **Wheatstone Commercial Audio DSP-MX**.
The Output DSP card shall be the **Wheatstone Commercial Audio DSP-OP**.
The High Capacity Audio Network Switch shall be the **Wheatstone Commercial Audio Wheatnet**.
The wall-mounting remote control panels shall be the **Wheatstone Commercial Audio SC-1, SC-2 and RC-2**.