AXEL TECHNOLOGY

OXYGEN 5 DIGITAL
BROADCAST DIGITAL MIXER

PRELIMINARY

Customizable modular structure

12/8 Fader control surface

Internal digital bus routing system

Less then 0,5 milliseconds global latency

24bit/48 kHz maximum sample resolution

EQ and Dynamics on all processing channels

Real time info displayed on every module

TCP/IP Ethernet / CobraNet Network

Sample rate converters on all digital inputs

OXYGEN 5 DIGITAL

Oxygen 5 Digital is the ultimate solution for the broadcast studio's today and future demands.
Designed to become the "backbone" of your operation, this innovative mixing console is acomplete platform easily adaptable to forthcoming technical developments.
Its modular DSP based architecture can be expanded to suit the most demanding technical requirements, providing crystal clear sound processing and advanced routing and communication features.

MODULAR STRUCTURE

Oxygen 5 Digital modular structure makes it possible to start with a simple and dedicated solution, and as soon as your studio needs more flexibility and/or functionality, you can easily add new interfaces and manage them through the TCP/IP network. This will allow your digital console to "grow up" together with your company, and to meet the more demanding applications of the future.

OXYGEN 5 DIGITAL CONFIGURATION

The Oxygen 5 Digital system is made up of several components, divided in two groups:

TCP/IP NETWORK PLATFORM

Like most users of e-mail and browsing the Internet, you likely didn't care about the virtual world behind the screen.
As new innovations come along, making connections to new work surfaces, processing or other equipment as easy as connecting a computer to your data-network is vital.

Axel Technology R&D staff empowered a new communication protocol as part of the engine in the Oxygen 5 Digital console, allowing use of the IT skills and equipment standards already available in your company.This means you can make and automatically explore, recognize the connected devices and their functionality from remote, for improved system management.

RELIABILITY VS. REDUNDANCY

History has proven that redundancy is a beneficial way to solve reliability problems by duplicating critical parts like power supplies, but when building a system using many different components from different manufacturers, redundancy becomes virtually impossible and system reliability becomes very important.
The systems of today depend on the connections to other components as well as the system components.
Running in the background of the Oxygen 5 Digital platform, the TCP/IP protocol is implemented on standard Ethernet and is compatible with all safety/security technologies available in the Worldwide accepted Ethernet network (e.g. spanning tree protocol, trunking).

MAINTENANCE, SUPPORT AND UPDATES

Oxygen 5 Digital allows the Broadcast facility personnel to plan and implement their requirements from a large group of currently available components as well as future developed components.

Although the Oxygen 5 Digital hardware and software network is easy to install and understand, one of the Axel Technology's system engineers can log on to your network and check your system from the Axel Technology main office by remote connection if needed.
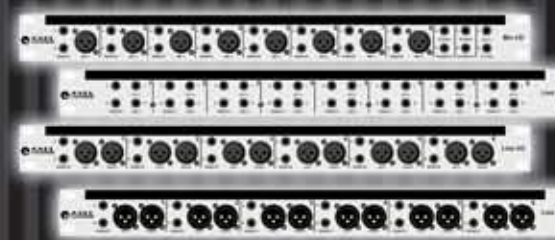
CONTROL SURFACES

As Oxygen 5 DiGital is completely modular, you can operate every functionality through various control surfaces.
As technology moves forward, new control surfaces will be designed in the future to give you the most up-to date mixing and monitoring facilities.
Any Control surface switch can do anything you want it to do, but… to not confuse you we have programmed a factory default assignment that represents the working procedures of the average Radio Studio to start with.
Switches have long life dual color LED's. So every active function is clearly shown.
The basic desktop frames are built to use as a drop through frame in a furniture surface.
They can accept 2, 3, 4, 5 or 6 pcs of 4 faders sections, or 2,3,4,5 pcs of 4 fader sections and 1 CRM/STUDIO section plus master blind.
With two frames (script space in the middle) you can have a maximum of 48 faders with CRM/STUDIO section. If more faders are needed larger frame sizes are available upon request to achieve the maximum of 128 by fader controllable stereo channels this design can handle.

I/O RACKS

An I/O rack is built using a 19" rack frame with a controller card (the engine), DSP card(s), I/O card(s) and power supply card(s).
An example of a starter system could be one I/O rack and one control surface. If you require more control over your I/O's you simply add a control surface component to your networked platform.
With the same ease you can add a new I/O rackto your networked platform to have a new mixing console for a different broadcast studio.

DEFINING YOUR I/O MODULES

With the Axel Technology's Oxygen 5 Digital modular concept, each I/O card is shared in the network and can be controlled from the network.
The I/O cards, together with the rack, will behave as a large Matrix in the network. If one or more DSP cards are inserted, your matrix will have mixing capabilities.

Available I/O Cards are:	• CRM/Phones outputs
• Microphone inputs	• CobraNet in/outputs
• Line inputs	• ADAT in/outputs
• Digital inputs/outputs	• more to come!
• Line outputs	

BREAKOUT PANELS

The objective standard for connecting audio components to I/O racks is the use of RJ45 connectors with STP (Shielded Twisted Pair) cable.
Oxygen 5 Digital rack-mounted interface units features balanced ¼" Jacks, XLR or D-type connectors on the front panel, and shielded RJ45 connectors on the back panel, which are used to connect to the I/O rack.

TECHNICAL SPECIFICATION

DIMENSIONS	Frame-10 is 12HE FRAME-10 accepts 2x4 fader sections + CRM or 1x4 fader sections with 1x CRM+1xBlank	Frame-14 is 12HE FRAME-14 accepts 3x4 fader sections + CRM or 2x4 fader sections with 1x CRM+1xBlank	Frame-18 is 12HE FRAME-18 accepts 4x4 fader sections+ CRM or 3x4 fader sections with 1x CRM+1xBlank	Frame-22 is 12HE FRAME-22 accepts 5x4 fader sections+ CRM or 4x4 fader sections with 1x CRM+1xBlank	Frame-26 is 12HE FRAME-26 accepts 6x4 fader sections+ CRM or 5x4 fader sections with 1x CRM+1xBlank
	Drop through hole: 430mm (front-back) 486mm (width) Front depth: 60mm Back depth: 90mm	Drop through hole: 430mm (front-back) 678mm (width) Front depth: 60mm Back depth: 90mm	Drop through hole: 430mm (front-back) 870mm (width) Front depth: 60mm Back depth: 90mm	Drop through hole: 430mm (front-back) 1062mm (width) Front depth: 60mm Back depth: 90mm	Drop through hole: 430mm (front-back) 1254mm (width) Front depth: 60mm Back depth: 90mm

MIC INPUT CARD

4 Balanced line inputs on RJ45 connectors
Level: +6dBU nominal input (software level trim (-20dBu up to +26dBu))
Phase reverse
Routing: Left to left, Right to Right, Mono to left, Mono to right, Right to left, Left to Right.
8x GPIO on MOS switch/+5v TTL. These can be Communication | Channel ON| Start/Stop| Red Light.

LINE INPUT CARD

4 Balanced line inputs on RJ45 connectors to be connected to an AES 3 input, output and 2 GPIO's
Software control over digital inputs is
Level
Phase reverse
Routing: Left to left, Right to Right, Mono to left, Mono to right, Right to left, Left to Right.

DIGITAL I/O CARD

4 Balanced line inputs on RJ45 connectors
to be connected to an AES 3 input, output
and 2 GPIO's Software control over digital
inputs isLevel
Phase reverse
Routing: Left to left, Right to Right, Mono
to left, Mono to right, Right to left, Left to Right.

Software control over digital outputs is
Routing: Left to left, Right to Right,
Mono to left, Mono to right, Right to left, Left to Right.
Level
Dimming
phase reverse
Talkback to the output
Total Mute

The GPIO's can be GPI or GPO
Possible functionality:
Communication (GPI)
Channel ON (GPI)
Start/Stop (GPO)
Red Light (GPO)

ANALOG LINE OUTPUT CARD

Every RJ45 connector on the line output card holds
a stereo balanced analog output and 2 GPIOs.
For each signal of a stereo digital output you have
digital software control over:
Routing
- Left to Left   - Mono to Right
- Right to Right   - Right to Left
- Mono to Left   - Left to Right

Level
Dimming
Phase inverse
Talkback to the output
Total mute.

The GPIOs can be GPI or GPO.
Functionalities of the GPIO are under software control,
for example:

Communication   (GPI function)
Channel on   (GPI function)
Start/Stop   (GPO function)
Red-light   (GPO function)

CRM / PHONE OUTPUT CARD

The RJ45 connector A and B are line level stereo
balanced outputs.
Connector C and D are headphone outputs.
Each RJ45 connector has 2 GPIOs.

For each signal of a stereo analog output you have
digital software control over:
Routing
- Left to Left
- Right to Right
- Mono to Left   Dimming
- Mono to Right   Phase inverse
- Right to Left   Talkback to the output
- Left to Right   Total level.
                        Total mute.

The GPIOs can be GPI or GPO.
Functionalities of the GPIO are under software
control, for example:

Communication   (GPI function)
Channel on   (GPI function)
Start/Stop   (GPO function)
Red-light   (GPO function)

COBRANET INPUT/OUTPUT CARD

The CobraNetTM card holds two RJ45 connectors
that carry CobraNet data over Ethernet (level 2).
CN A should be connected to your audio-network.
CN B may be used for a redundant connection.
Over the CobraNet connection you can send and
receive multiple audio channels, the number of
channels (8, 16 or 32 send and receive) depends
on the selected CobraNetTM card, see other
specifications in the brochure.

For each signal received from CobraNetTM you have
digital control over:
Level
Phase inverse
Routing:
- Left to Left
- Right to Right
- Mono to Left
- Mono to Right
- Right to Left
- Left to Right

For each signal sent to CobraNetTM you have digital
control over:

Routing	Level
- Left to Left	Dimming
- Right to Right	Phase inverse
- Mono to Left	Talkback to the output
- Mono to Right	Total mute.
- Right to Left	
- Left to Right	

With D&Rs CobraNetTM Manager Software you can
visualize and control/plan/schedule the CobraNetTM
audio network.
With this card we always deliver a light version of this
software. (4 devices max.)

ENGINE CARD

The engine is the main controller of the rack system.
On this card all information for the rack is processed.
The RJ45 Connector is your gateway to the Ethernet
switch that is connected to all MambaNetTM
compatible devices.

For service only the following interface connectors
are available:
RS232
VGA
Keyboard
Mouse
USB

On the BNC connection you can connect a word clock
output signal or a word clock input signal.
The input signal can be terminated with 75 Ohm using
the latching switch.
By plugging a DSP card in the I/O rack you add mixing
capabilities to your matrix.
In combination with the engine card you create an
advanced mixing console.

The DSP card processes 64 mono input channels to
32 busses and 8 monitoring busses.
On an input channel the following processing is available:

Low cut
Gain
EQ
Dynamics
Level meter
pre/post switching
You can insert a maximum of 4 DSP boards.
This gives you a fascinating mixing console of 256 mono
input channels to 32 busses (and 8 monitoring busses.

ADAT INPUT/OUTPUT CARD

The ADAT input/output card hold two optical
connectors receiving multi channel digital audio
and two optical connectors for transmission of
multi channel digital audio.

For each signal of a ADAT input you have digital
control over:

Level
Phase inverse

Routing:
- Left to Left
- Right to Right
- Mono to Left
- Mono to Right
- Right to Left
- Left to Right

For each signal of a ADAT output you have digital
control over:

Routing	Level
- Left to Left	Dimming
- Right to Right	Phase inverse
- Mono to Left	Talkback to the output
- Mono to Right	Total mute.
- Right to Left	
- Left to Right	

SPECIFICATIONS

General:

Matrix up to 1280x1280.
Word clock input or internal generator.
Synchronization
Word clock input or internal generator.
32 kHz, 44.1 kHz, 48 kHz.
Word clock out 75R.
Selectable 75 Ohm termination on word clock input.

I/O Cards:

DSP
32 bit floating point processing.
32 stereo channels.
32 mixing busses.(Program|Sub|Cue|Comm|24x Aux)
6 band fully parametric equalizer.

MIC

Electronically balanced, 2Kohm.
Analog input sensitivity -70dBu up to +20dBu (Pad).
CMRR MIC inputs: 85dB @ 1kHz, maximum gain.
Optional transformer balancing.

Line input
Electronically balanced, 10kOhm.
Input sensitivity +6 dBu, maximum +26dBu.
CMRR Line inputs: 50dB @ 1kHz, maximum gain.
Optional transformer balancing.

Line Output
Electronically balanced, <47Ohm.
Output level +6dBu, maximum output level +26 dBu.
Optional transformer balancing.

CRM Output

Electronically balanced, <47 Ohm.
Output level +6dBu, maximum output level +26 dBu.
Optional transformer balancing.
Headphones out:
- 80mW into 600R.
- minimum load 8 Ohm.
Digital Inputs/Output
-AES/EBU (AES3), S/P-DIF (cinch or optical).
-16/20/24 bit.
-THD+N: -105dBfs @1kHz, 0 dBFS.
-Input/Output impedance: 110 Ohm (XLR) / 75 Ohm
-Output level: 2 to 5 volt
GPI
-5V TTL, 100 kOhm input impedance
GPO
-Selection of optical isolated relay or 5V TTL output
-Optical isolated relays is max: 50V at 200mA