A · X · U · M

Transforms your idea's into reality

Audio Matrix of 1280x1280	Internal Web server for configuration
Up to 126 stereo modules	Add a Control Surface whenever you need one
N-1 per module	Control inter connections by Ethernet
32 mixing busses	MambaNet SDK available to add custom functionality
Up to 16 stereo monitor busses	One platform creates many Studios
Flexibility in your Studios by Design	Digital Audio Mixing Platform solution
Free assignable knobs	Multiple Control surfaces, one system

D&R

Table of contents

Your solution for now... and future requirements

Maximum return with minimal investments

Axum is the solution for broadcast studios for the demands of today and many years in the future. Not only will the Axum be the "Backbone" of your operation but a complete broadcast studio platform easily adapted to forthcoming technical developments. Designed for imminent growth, it can be expanded to suit your company's wishes. The following pages will allow you a look and virtual feel of the future that is already available today!

With competition breathing down your neck and a fortune invested in Announcers, Journalists, program material, and equipment, the design team at D&R developed the Axum fotr you. So you can start with a small budget and as demands come along, expand the "heart" of your broadcast studio. Built into the foundation of the Axum is a "Design for future needs" technology that will deliver the advanced studio solution you require for your multiple broadcasts for today and future needs.

We designed MambaNet™, a future proof network platform

From a virtual to a practical solution

Most of us remember those days without internet…… with the D&R Axum, a similar giant step can be made in your broadcast studio complex. All of you use e-mail and brows the Internet, you likely didn't care about the virtual world behind the screen, known as the TCP/IP protocol. Continuously new innovations come along that makes connections to new work surfaces, to processing or other equipment. Just as easy as connecting a computer/tablet to your data-network. D&R introduces MambaNet™ …… a protocol that runs over Ethernet (Level 2). As part of the engine in the Axum, this means you can make use of the IT skills and equipment standards already available in your company and automatically explore, recognize devices and their funtionality. Now that is what we call "FUTURE PROOF". equipment standards already available in your company and automatically explore, recognize devices, and their functionality. Now that's what we call "Future Proof".

Built in flexibility for advanced applications

The **Axum** with its' network platform makes it possible to start with a simple and dedicated solution and as soon as you need more flexibility and/or functionality you can easily add new devices to your network. An ideal solution for equipment and more demanding applications of the future.

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 Axum platform, MambaNet™ is implemented on standard Ethernet and is compatible with all safety/security technologies available in the worldwide accepted Ethernet network (e.q. Spanning tree protocol, trunking).

The Axum consists of several system components divided in two groups:

• **Control surfaces**

The D&R Axum is completely modular and allows selection out of various control surfaces. We can supply a number of different frames accepting 4 fader sections, CRM sections and blinds. Or you want to built in the faders directly into your furniture, then we can supply drop through 4 fader sections. As technology moves forward and your needs are growing, other types of control surfaces will be designed in the future to give you the possibility to create the right layout for your individual requirements. And… we really appreciate user feedback.

• **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 is to have 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 simplicity you can add a new I/O rack to your networked platform to have a new mixing console for another broadcast studio.

# One Network …

… Many work surfaces

Defining your I/O modules

The concept of modular control surfaces fits perfectly in the virtual world of networking. With the D&R MambaNet™ network, you'll only need to determine what the 'perfect layout' for your broadcast studio should be by selecting the right control surface modules needed for your application. When you connect the preferred surfaces to the MambaNet™ network, it is then possible to configure your system so the knobs and switches do what you want them to do. With the four fader Broadcast Panel and Control Room/ Studio Panel, it is possible to create a small, medium, or large "easy to understand" On-Air or production console. This platform will become even more flexible as other smaller and larger control surfaces are added to the Axum. So keep up with the developments for the Axum on our website at: www.d-r.nl or contact your D&R Dealer or Distributor today.

With the D&R Axum's modular concept, MambaNet™ controls the primary portion of the I/O rack. 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:

•	Microphone	inputs
•	Line	inputs
•	Digital	in/outputs
•	Line	outputs
•	CRM/Phones	outputs
•	CobraNet	in/outputs
•	FireWire	in/outputs
*	AES67	in/outputs

and more to come…..
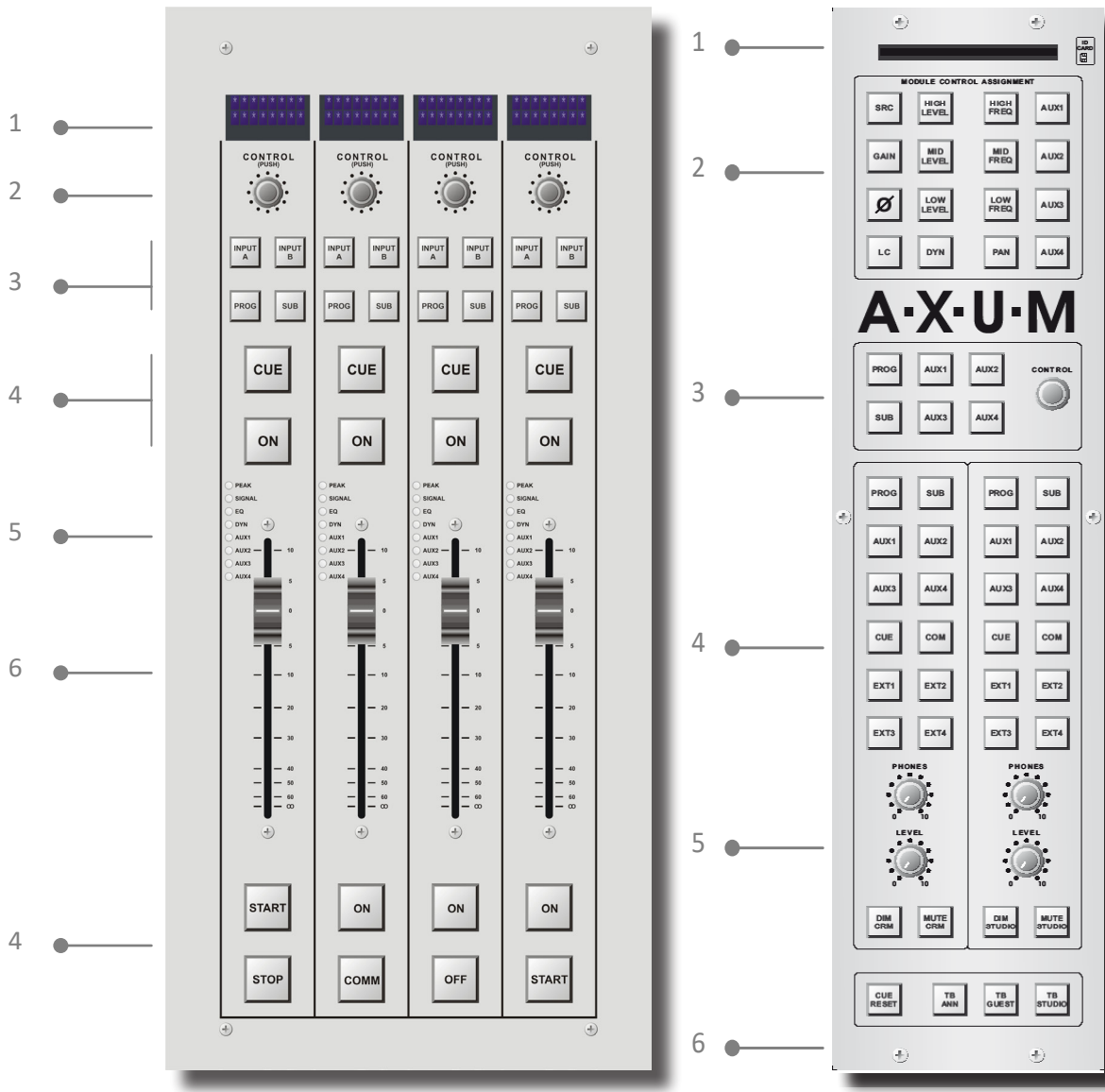
4 Fader Broadcast Panel

Creating your own control surface layout is as easy as selecting different panels. The broadcast panel as seen above contains 4 modules with faders. The various AXUM frames allow you to add 4, 8, 12, 16 or more faders in a single control surface. The modularity and power of MambaNet™ makes it possible to have up to 4 frames connected to a single Engine (I/O rack). That makes it possible to create 4 independant studios with more surfaces controlling your engine. The following controls can be found on this panel.

1) Display for module information
2) Encoder for data entry
3) Small switches (e.g. A/B select & routing)
4) Large switches (e.g. CUE, ON, START & STOP)
5) LEDs to indicate module settings.
6) Motorized Faders.

Control Room / Studio Panel
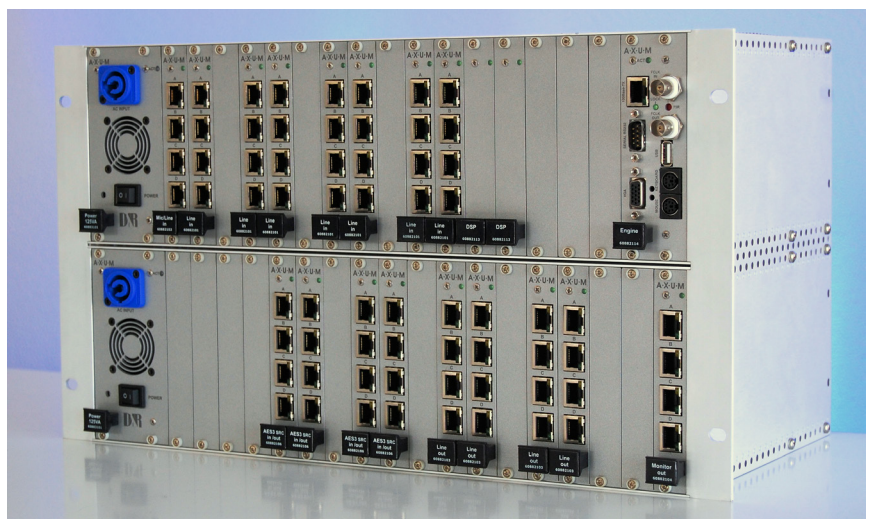
The following controls can be found on this panel.

1) Chip card reader to automatically logon to the control surface.
2) Switches that determine which function the channel encoder will perform.
3) Bus section to set specific buses on/off and adjust the level of the signal to the busses.
4) Control room speaker, phones level and source selection.
5) Studio room speaker, phones level and source selection.
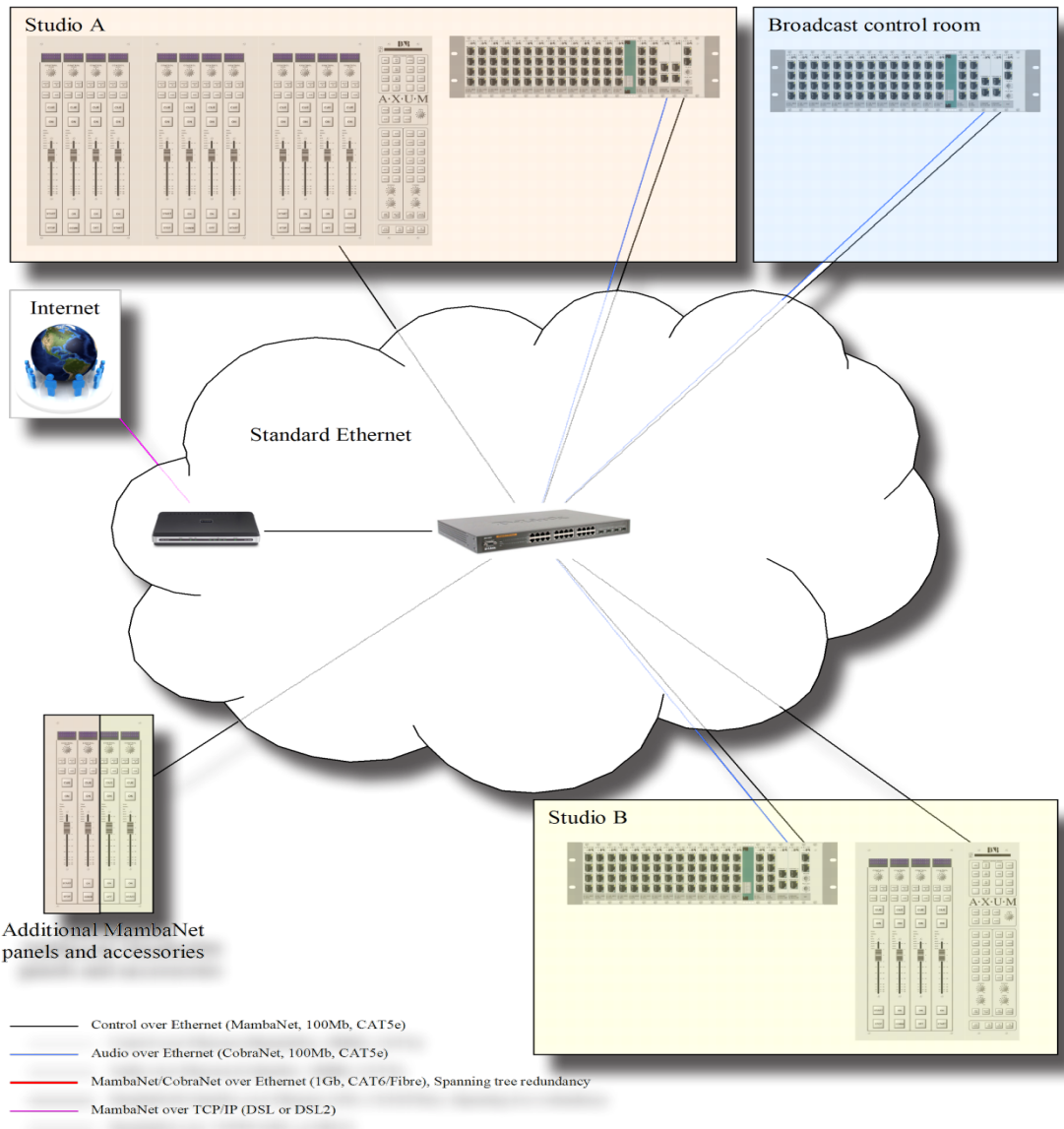6) CUE reset and talkback functions.
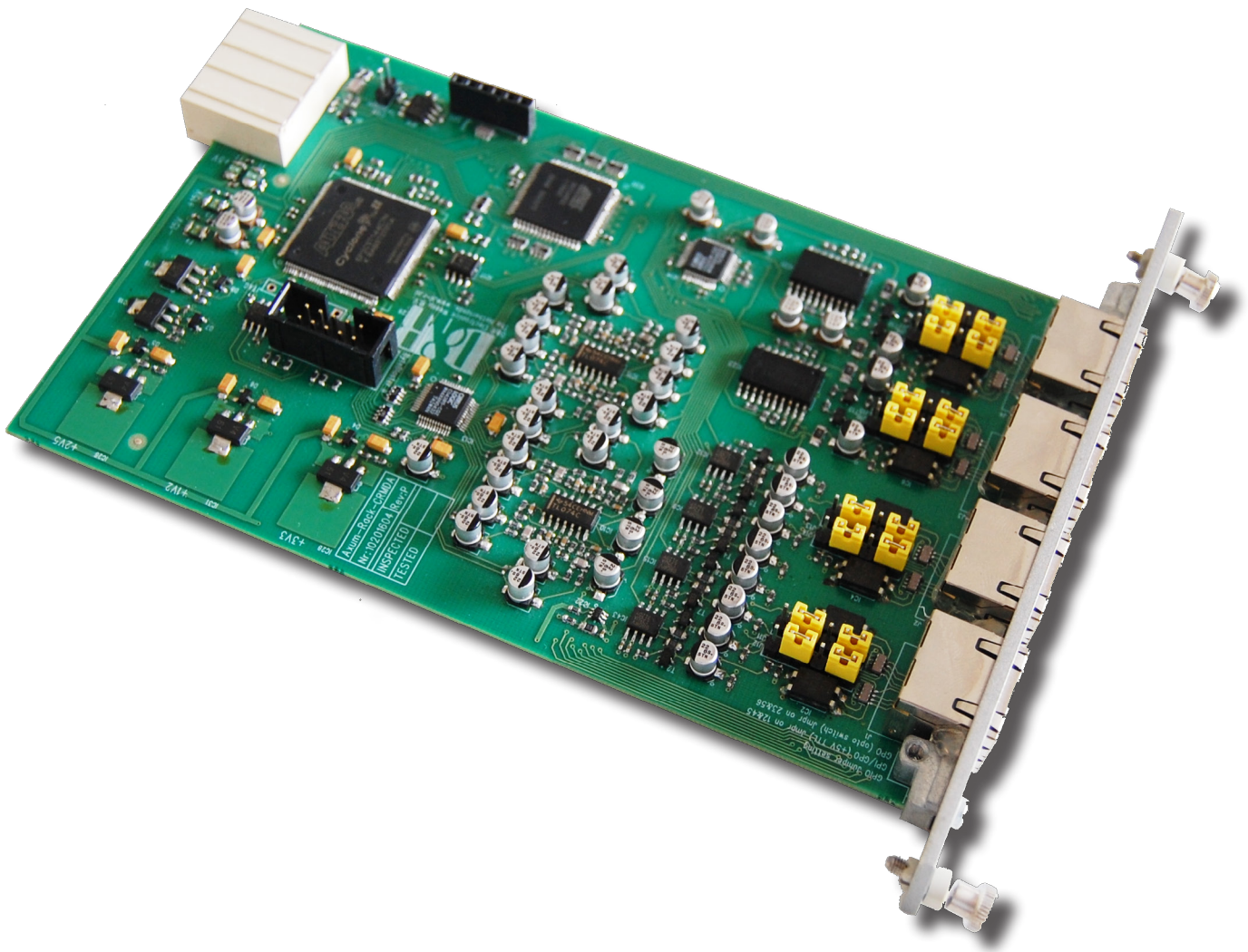
Define your I/O

The modular concept based on MambaNet™ is also found in the I/O rack. Each I/O card can be shared or controlled in the network. The I/O cards in the rack are recognized in the network as inputs and outputs in a matrix. Mixing capabilities are available once one or more DSP cards are inserted.

In the following pages we will show and describe you all present available I/O cards currently available for the AXUM platform.

Control over Ethernet (MambaNet, 100Mb, CAT5e)

Audio over Ethernet (CobraNet, 100Mb, CAT5e)

MambaNet/CobraNet over Ethernet (1Gb, CAT6/Fibre), Spanning tree redundancy

MambaNet over TCP/IP (DSL or DSL2)

An example topology

This topology example shows a facility with a Studio "A" and Studio "B". Additionally, this facility has a separate central broadcast control room. This block diagram shows all required studio interconnections to share control and audio with each other. Patching audio between the different studios is done via CobraNet™. With D&R's CobraNet-Manager™ management software, you can visualize and control the complete audio network. The local audio (per studio) can be connected to the local racks allowing you to select the desired I/O cards in the racks.

The central control room Axum I/O rack can be controlled by any control surface connected to the MambaNet™ network. This gives you maximum control over all your sources. And... If you want more? Simply add one or more Axum system components to the network. The Ethernet cloud can be filled with any Ethernet design your system administrator would want. An optional and valid solution is to have a network switch (Ethernet managed switch) in every studio booth. If requested, a redundant topology can be implemented in this set up.

RACK-TWO with a selection of in/output modules

Rack-mounted system interface units
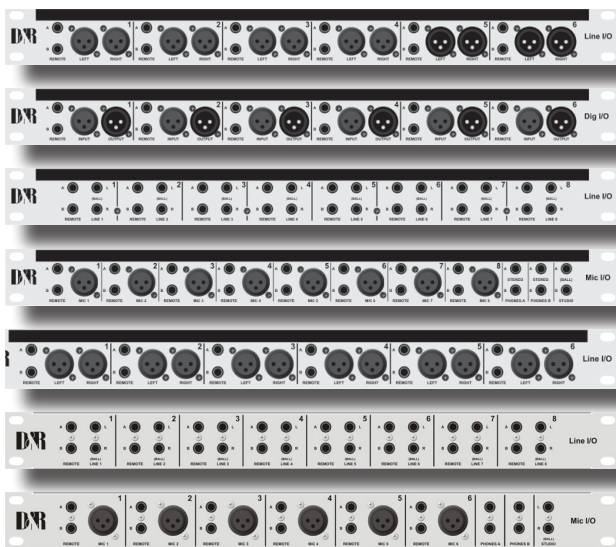
The defacto standard for interfacing digital audio components to I/O racks is by use of RJ45 connectors with STP (Shielded Twisted Pair) cable. D&R used this breakout system in earlier D&R consoles with succes. The rack-mounted interface units have balanced ¼" Jacks and XLR connectors on the front panel and shielded RJ45 connectors on the back panel which are used to connect to the I/O rack. On the left and below you see a number of passive break out panels.
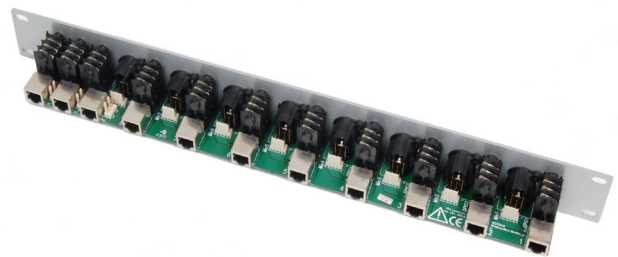
Maintenance, tech support & staying up to date

The D&R Axum utilizing MambaNet™ and CobraNet™ was designed as a long term solution to the needs of Broadcast facilities for future innovations and developments in broadcast audio and software.

The Axum allows Broadcast facility personnel to plan and implement their requirements from a large group of currently available components as well as future developed components. The latest info on updates will be available on the D&R website at http://www.d-r.nl or you can contact our main office sales department in The Netherlands. Although the Axum hardware and software network is easy to install and understand, one of the D&R system engineers can log on to your network and check your system from the D&R main office in minutes if needed.

Also available for download and display on the D&R website are all the related brochures and manuals of the AXUM. There is also a "whitepaper" for the MambaNet™ network. The product/technical brochure gives you insight in the currently available worksurfaces, panels, and I/O cards as well as their technical specifications. The MambaNet™ whitepaper gives a look into the basics of the studio platform. This could be valuable information for your technicians and/or system/network administrators as well as other equipment manufacturers.

Feel free to contact us!

# Imagine... one Rack with 4 independant Control Surfaces

Yes... that is possible

This brochure provides and outlines the technical information of the hardware components available for the AXUM platform. Use this information to help you select the hardware components you need for your application. The system components communicate with each other using the MambaNet™ protocol. This protocol, (developed by D&R), can operate on different hardware and software layers (Ethernet, TCP/IP, CAN, RS232, Firewire, etc…). The protocol is designed to be future proof and is open source software for customers and other manufacturers to add their own surfaces or processing to the Broadcast studio platform. More information on MambaNet™ can befound in the MambaNet™ whitepaper.

Audio can be shared within your equipment setup by using a variety of I/O cards. For a networked audio solution we suggest using the rugged CobraNet™ audio network in combination with D&R's CobraNet™ Manager. When using these networked solutions it is possible to have all your studio interconnections based on Ethernet (level 2). Your local audio equipment may be connected with all well known industry standards such as XLR's, ¼" Jacks, AES3 or another network solution. The concept of modular control surfaces fits perfectly in the virtual world of networking and MambaNet™. You only need to construct the 'perfect layout' for your studio by selecting the control surface modules required for your application.

It is possible to (re)configure your system's switches and knobs if needed when you connect the selected surfaces to the MambaNet™ network. Fixed workspace assignments are outdated these days. A small 8 fader broadcast ON-Air control surface can be created in Frame-10 with 2x 4 fader sections and 1x Control Room section. Other configurations (also in a split version, left and right from a script space) can be put together by yourself or your dealer. The platform's future use will be extended with other smaller and larger control surfaces under development for the AXUM platform.
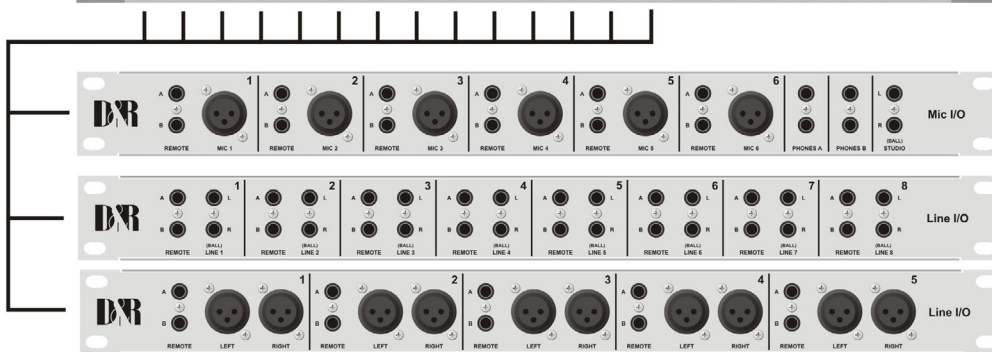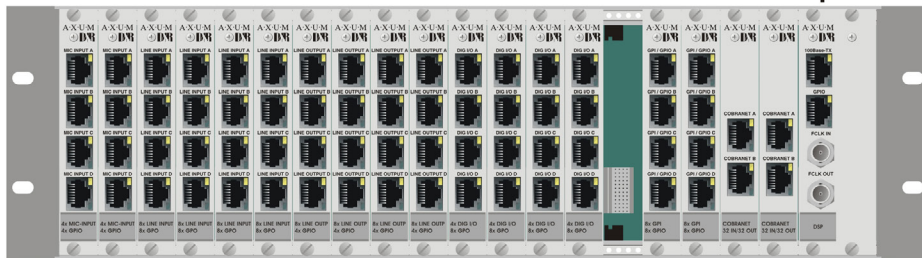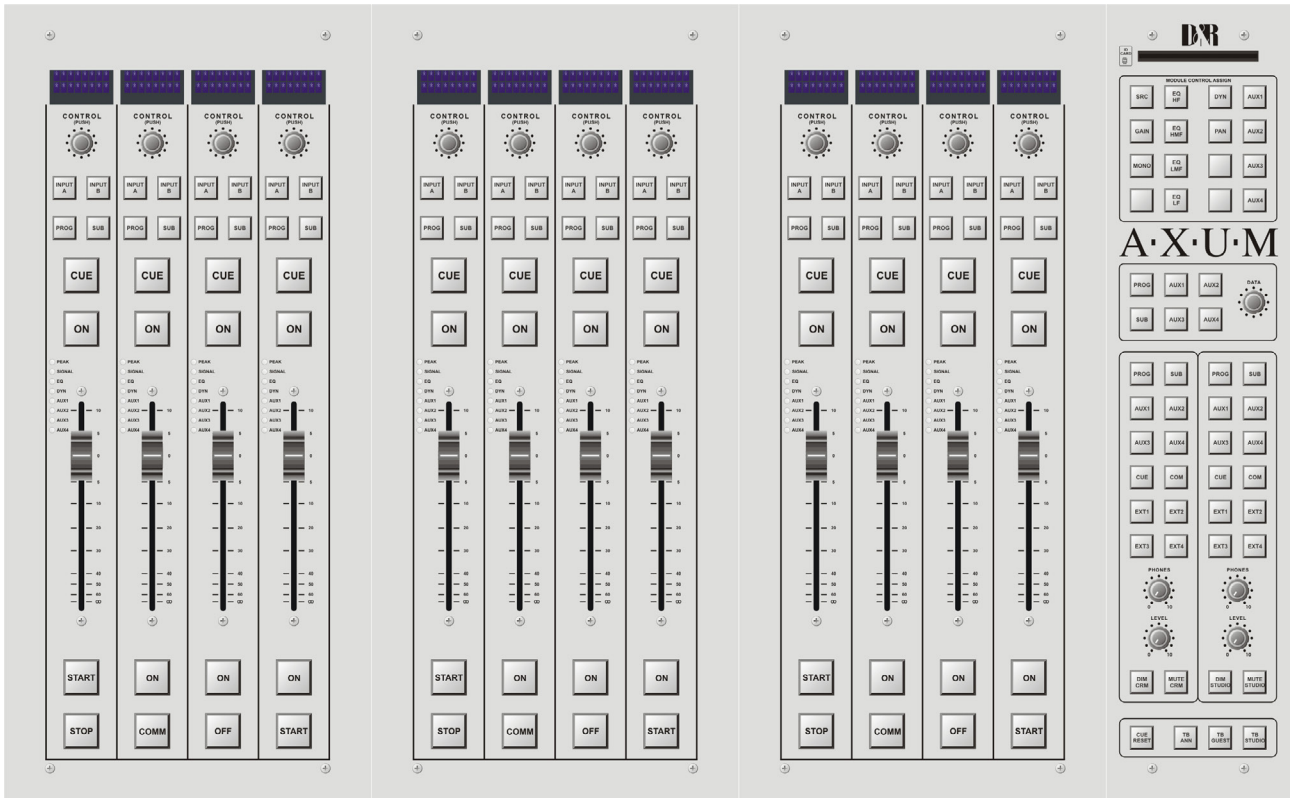
12 fader set up example with Rack One and three break-out panels.

*Total control over your station and...
you can satisfying nearly
any engineering demand!*
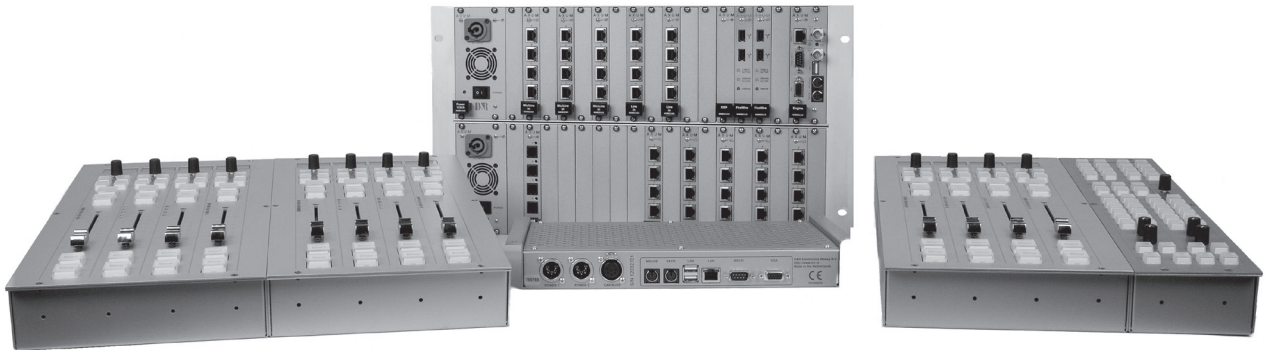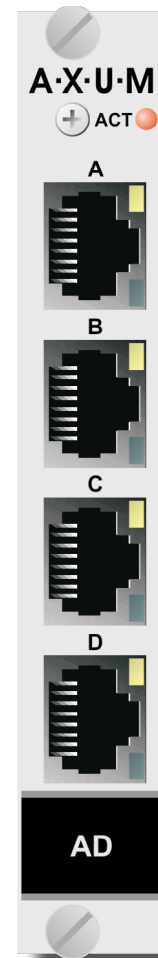
MIC card

Each RJ45 connector on the microphone cards can be connected to a single balanced microphone and 2 GPIOs (General purpose input/outputs).

For the microphone you have software control over:
•   Phantom power (+48V)
•   PAD switch for 20 dB gain reduction
•   Analog Microphone Gain
•   Phase reverse
•   Routing and summing per pair
•   (1/2 and 3/4)
•   Each GPIO can be an isolated GPO or 5v TTL GPIO. Functionalities of the GPIO are under software controlled, for example:

•   Cough (GPI function)
•   Communication (GPI function)
    MIC-on (GPO function)
•   Red light (GPO function)

Line input card

Every RJ45 connector on the line input card can be connected to a stereo balanced line signal and 2 GPIOs.

For each signal of a stereo line input you have digital software control over:
•   Level
•   Phase inverse
•   Routing:
•   - Left to Left
•   - Right to Right
•   - Mono to Left
•   - Mono to Right
•   - Right to Left
•   - Left to Right
•   Each GPIO can be an isolated GPO or 5v TTL GPIO.
•   Functionalities of the GPIO are under software control, for example:
•   Communication   (GPI function)
•   Channel on   (GPI function)
•   Start/Stop   (GPO function)
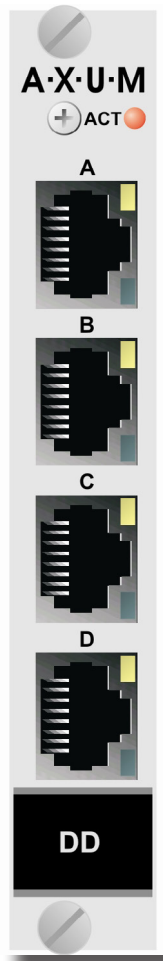
Digital input/output card

Each RJ45 connector on the digital input/output card can be connected to an AES3 input, output and 2 GPIOs.
For each signal of a stereo digital input and output 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

Extra on the Output
- Dimming
- Talkback to the output
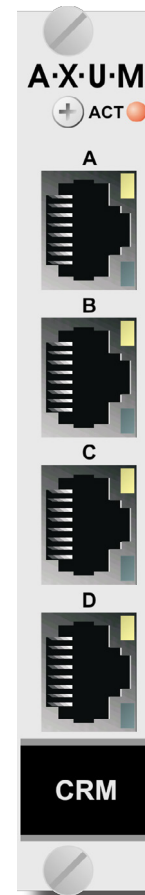- Total mute.

Each GPIO can be an isolated GPO or 5v TTL GPIO.
Functionalities of the GPIO are software controlled, for example:

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

AES 67/USB input/output card

The AES67/USB card is a 16 mono channel Audio over IP card including an additional USB interface that also can handle 16 mono in and outputs.

Line output card

CRM | Phone output card

Each RJ45 connector on the line output card has stereo balanced analog outputs and 2 GPIOs.
For each signal of a stereo digital output
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
- Dimming
- Talkback to the output
- Total mute
  Each GPIO can be an isolated GPO or 5v TTL GPIO.
  Functionalities of the GPIO are under software control, for example:
- Communication (GPI function)
- Channel on (GPI function)
- Start/Stop (GPO function)
- Cue (GPO function)

RJ45 connector A is the CRM output and B is the STUDIO output. Connectors C and D are headphone outputs. All RJ45 connectors have 2 GPIOs.
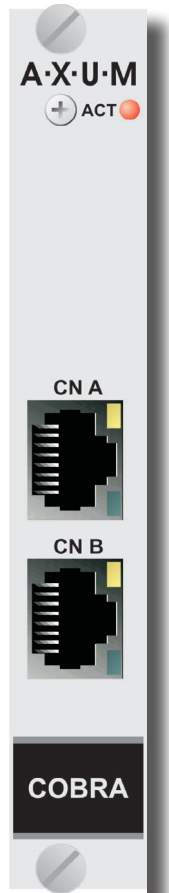You have digital control over:

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

Each GPIO can be an isolated GPO or 5v TTL GPIO.
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 CobraNet™ 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.
Utilizing the CobraNet™ connection, you can send and receive multiple audio channels. The number of audio channels is 16 send and receive mono channels.

For each signal received from CobraNet™ 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 CobraNet™ 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
- Dimming
- Talkback to the output
- Total mute.

With D&R's CobraNet™ Manager Software, you can visualize and control the CobraNet™ audio network. Included with this card is a light version of CobraNet™ Management software

Hybrid card
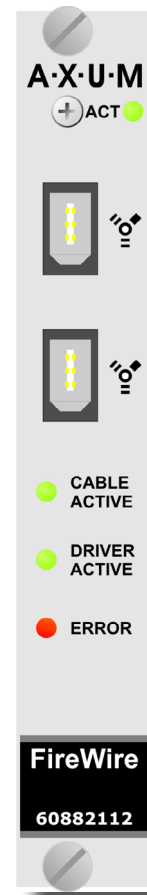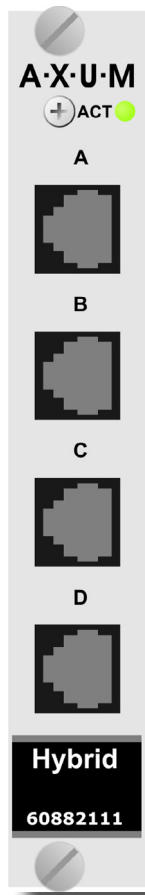
FireWire (IEEE 1394) card

The Hybrid card contains 4 separate analog
hybrids. Each RJ11 connector contains a telephone
line in (wall) and out (telephone set).

For each hybrid input signal you have
digital software control over:
- Level
- Phase inverse
- Routing

For each hybrid output signal you have digital control over:
- Level
- Phase inverse
- Routing
- Dimming / muting
- Talkback to the outputs

Hybrid functions:
- DTMS / FSK generation / detection.
- Caller ID
- Ring detection
- Multi hybrid to single channel.

The IEEE1394 streaming engine can handle a total
of 8 stereo input channels and 8 stereo output channels.
For each stereo FireWire input signal you
have digital software 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 stereo output 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
- Dimming / muting
- Talkback to the outputs
- daisy chain connection
- Status LED indication
- ASIO and WDM drivers.
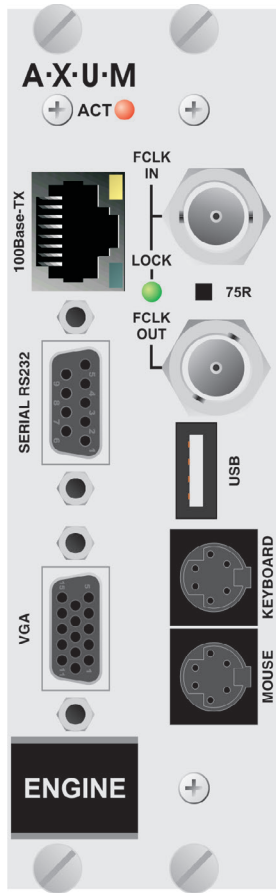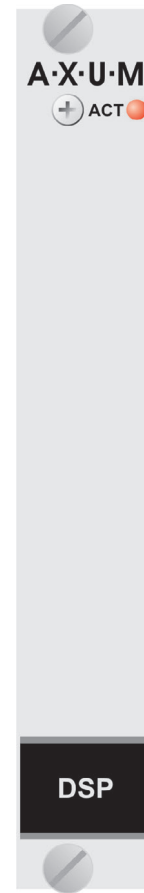
AXUM engine card

The AXUM engine card controls the entire rack system. All information for the rack is processed on this card.

The RJ45 Connector should be connected to the Ethernet switch that is connected to all MambaNet™ compatible devices.

Advanced functions can be accessed by using the following interface connectors:

- 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.

DSP card

By plugging a DSP card in the I/O rack you add mixing capabilities to your matrix. In combination with the engine card you will get an advanced mixing console.
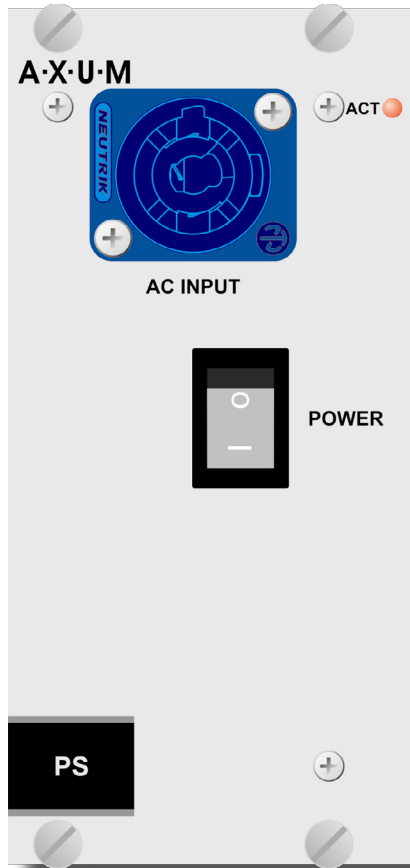
The DSP card processes 32 stereo channels to 16 stereo busses and 4 stereo monitoring busses.

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 mixing console of 128 stereo channels to 16 stereo busses as well as 16 stereo monitoring busses.

Drop through Frames

We also have dropthrough frames that can be mounted elegantly inside furniture.

CRM Section

Power supply card

The power supply card is also controlled by MambaNet™ making it possible to check the voltage levels at the supply itself.

If you insert a second power supply card, it will act as a redundant power supply for the system.

Mains voltage (100V-240V, 50-60Hz) is connected with a locking Neutrik PowerCON™ connector.

With the power switch you can turn the local power supply on and off.

FADER section

ETX UNIT

Frame sizes

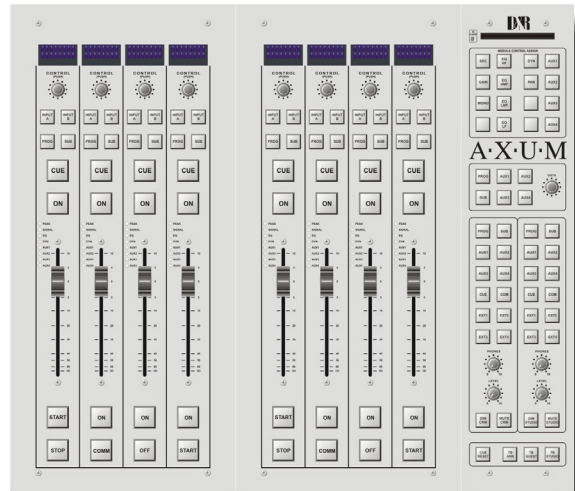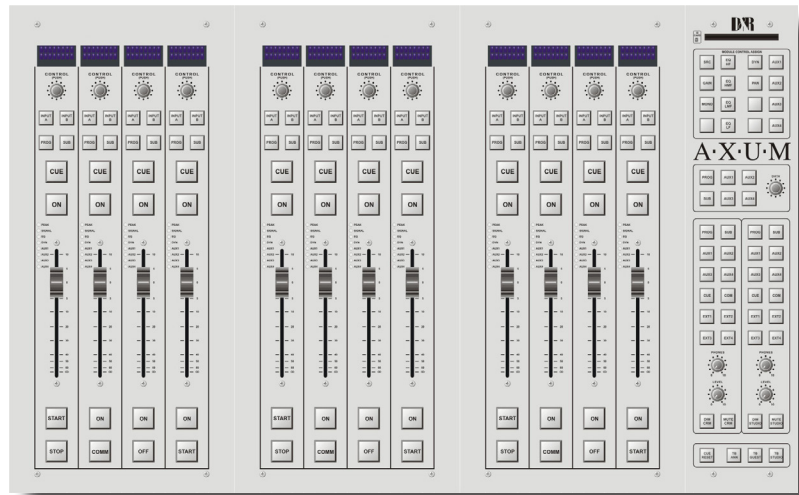The shown Frame configurations on the right are just examples, but may of course differ for your application.

Other combinations can be made with the drop through versions of the AXUM fader panels.
Then you are completely free where to locate the Control Surfaces and how many (up to 128 faders)
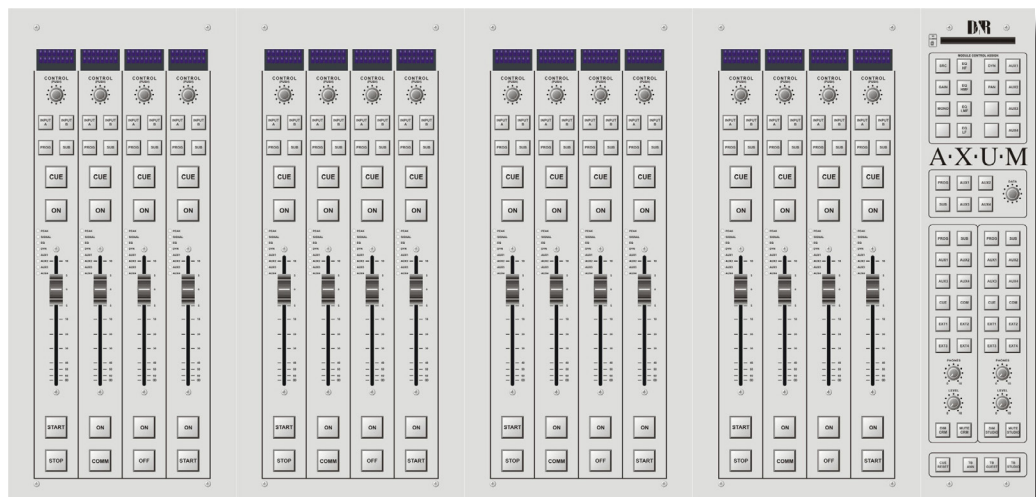
Frame 10

Frame 14

Frame 18

Either you control the AXUM locally...

or... via remote control from anywhere

The Company

D&R has been operating for 40 years now and its intention is always to make the best products possible for a reasonable price. Our export business worldwide to every country you can think of has brought us a steady growth in turnover and widespread distribution among buyers. Initially D&R started in the seventies with live sound mixing consoles and expanded to recording consoles. The managing director Duco de Rijk and founder of D&R has started this company back in 1972. The past 10 years D&R is mainly involved in Broadcast related products, such as the AXUM, AIRMATE-USB, AIRENCE, AIRLAB, LYRA and a range of Hybrid related products. D&R is an independent financially stable company without any external funding by banks or investors.

And, as of this year 2012 D&R is already 40 years in business. A moment to thank all present D&R people and those who worked for an with us in the pasrt for their unbeliev-able loyalty and input. It is these fine people who have made D&R into a dynamic and professional audio company for which virtually no task is impossible. It has been a fantastic challenge for our people, all of whom are united as part of this stable family company in a genuine passion for the professional audio industry.

CABLING:

Connecting system parts:

All system parts of the AXUM will be connected using the well known Ethernet standard.
These connections have to be confirming IEEE 802.3 standard, where each system part has a 100BASE-TX connection.
With switches you can make larger networks with various types of interconnectivity.
We advice to only use managed switches in your system, although unmanaged switches will function normally.
For your information we hereby specify some connection standards available on standard Ethernet.

Name	Mbps	Cable	Max. length
100BASE-TX	100	unshielded twisted pair	100 m
100BASE-FX	100	multimode fiber	2 Km
100BASE-T	1000	unshielded twisted pair	100 m
100BASE-SX	1000	multimode fiber	500 m
100BASE-LX	1000	single-mode fiber	5 Km
100BASE-ZX	100	single-mode fiber	70 Km

If your system only has one single surface and one I/O rack, it is possible to connect these system parts with a cross cable (after you have configured your I/O rack). This is a basic setup, saves cost, but it means you can not expand your system without first adding a switch in your network.

All external audio equipment can be connected to the passive 19" rack-mount breakout panels with standardized connectors such as XLR male/female and jacks as described earlier. From these 19" passive rack-mountable breakout panels you can connect the XLR/Jack in/outputs that are hardwired to RJ45 connectors on the back of these panels directly to your AXUM system with shielded twisted pair cable (STP).

The I/O cards in the 19" AXUM rack have equivalent RJ 45 connectors to accept these STP cables.

It depends upon the installation needs which passive rack-mount breakout panel will be used to connect with the AXUM I/O cards.

For your info STP cable is the only choice and can be used up to lengths of 100 meters.

Technical Highlights:

General:
- Matrix up to 1280x1280.
- Headroom: adjustable 0dB... 20dB
- Tone generator.

Synchronization:
- Word clock input or internal generator.
- 32 kHz, 44.1 kHz, 48 kHz.
- Word clock in/out 75 Ohm.

DSP
- 32 floating point processing.
- 32 stereo channels (max. 128 stereo channels).
- 6 band parametric equalizer| Dynamics | LowCut
- 16 stereo mixing busses.
(Program | Sub(Rec) | Cue | Comm |12x stereo Aux).
- 4 stereo monitor busses (max. 16 monitor busses)
- Max. 4 DSP cards per I/O rack.

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

Line input
- Electronically balanced, 10kOhm.
- Nominal level +6dBu, maximum +26dBu.
- CMRR Line inputs: 50dB @ 1kHz, maximum gain.
- Optional transformer balancing (on breakout racks).

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

CRM Output
- Electronically balanced, <47 Ohm.
- Output level +6dBu, max. 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.
- 16/20/24 bit.
- THD+N: -105dBfs @1kHz, -1 dBFS.
- In/output imp. 110 Ohm / 75 Ohm (transf In/Out)
- Outp. level: >5Vpp (into 110 Ohm load)
  Input sensitivity: >200mV

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

Frames/panels

Frame-10:
- 10 module positions : e.g. 8 modules + CRM/Studio
- Outside dimensions : 503x430x60/90 mm
- Drop through hole : 486x420 mm
- Weight : 10 Kg

Frame-14:
- 14 module positions : e.g. 12 modules + CRM/Studio
- Outside dimensions : 695x430x60/90 mm
- Drop through hole : 678x420 mm
- Weight : 15 Kg

Frame-18:
- 18 module positions : e.g. 16 modules + CRM/Studio
- Outside dimensions : 896x430x60/90 mm
- Drop through hole : 870x420 mm
- Weight : 25 Kg

Frame-22:
- 22 module positions : e.g. 20 modules + CRM/Studio
- Outside dimensions : 1082x430x   60/90 mm
- Drop through hole : 1062x430 mm
- Weight : 30 Kg

Panels:
- 4 fader panel : 4 module positions
- CRM/Studio panel : 2 module positions
- Blind panel-1 : 1 module position
- Blind panel-2 : 2 module positions

Specifications AXUM digital Audio System

MIC inputs
: Electronically balanced
: Input impedance 2k Ohm
: Input sensitivity -70dBu up to +20dBu (PAD) (PGA2500)
: Dynamic Range 118dB (AD converter PCM4202)
: Total Harmonic Distortion plus Noise -108dB (30dB gain)
: CMRR MIC inputs: 85dB @ 1kHz, maximum gain
: Frequency response 20Hz - 20kHz ± 0.1dBr (sample rate 48kHz)
: Crosstalk 1kHz < -118dBr
: Phantom is switchable +48 Volts
: Transformer balancing is optional on the break-out panel

Line inputs
: Electronically balanced
: Input impedance 10k Ohm
: Input sensitivity +6dBu, maximum input +26dBu (+/- 20dB gain range).
: Dynamic Range 118dB (AD converter PCM4202)
: Total Harmonic Distortion plus Noise -105dB
: CMRR Line inputs: 30dB @ 1 kHz
: Frequency response 20Hz - 20kHz ± 0.1dBr (sample rate 48kHz)
: Crosstalk 1kHz < -123dBr
: Transformer balancing is optional on the brake-out-box

Line Outputs
: Electronically balanced
: Output impedance 56R Ohm.
: Nominal output level +6dBu, maximum output +26dBu
: Dynamic Range 118dB (AD converter PCM4104)
: Total Harmonic Distortion plus Noise -100dB
: Frequency response 20Hz - 20kHz ± 0.1dBr (sample rate 48kHz)
: Crosstalk 1kHz < -118dBr
: Transformer balancing is optional on the brake-out-box

Phones Output
: Stereo unbalanced
: Output impedance 5R Ohm.
: Nominal output level +6dBu, maximum output +26dBu
: Max. Output power, 1W into 32R Ohm, 80mW into 600R Ohm
: Dynamic Range 114dB (AD converter CS4385)
: Frequency response 20Hz - 20kHz ± 0.1dBr (sample rate 48kHz)

Digital Inputs
: AES/EBU (AES3) or S/P-DIF Transformer balanced
: Input Impedance: 110R Ohm / 75R Ohm (jumper setting)
: Differential input sensitivity 200mV
: Dynamic Range (sample rate converter) 144dB
: Total Harmonic Distortion plus Noise (sample rate converter) -140dB
: 16/20/24 bit, 32 kHz to 96 kHz (optional built in sample rate converter)

Digital outputs
: AES/EBU (AES3) or S/P-DIF Transformer balanced
: Output Impedance: 110R Ohm/75R Ohm
: Output level: AES3 5 Vpp, S/P-DIF 1Vpp
: 16/20/24 bit, 32kHz, 44.1kHz ore 48kHz
: Total Harmonic Distortion plus Noise -140dB

GPIOs
: All GPO's are by opto isolated relays able to handle a max of 50V at 200mA or 5V TTL 560E 560R (8mA) out
: All GPI's have a 5V TTL 100kOhm circuitry. GPIO-MIC has a 5V/56Ohm LED driver circuit

DSP Processing

EQ is 6 band, any band can perform one of the following functions/specifications:

Off	: no function
High Pass Filter	: +/- 18 dB (10Hz up to 20 kHz shelving/bell/notch), Q: 0.1 to 10 variable.
Low Shelve	: +/- 18 dB (10Hz up to 20 kHz shelving/bell/notch), Q: 0.1 to 10 variable.
Peaking	: +/- 18 dB (10Hz up to 20 kHz shelving/bell/notch), Q: 0.1 to 10 variable
High Shelving	: +/- 18 dB (10Hz up to 20 kHz shelving/bell/notch), Q: 0.1 to 10 variable
Low Pass Filter	: +/- 18 dB (10Hz up to 20 kHz shelving/bell/notch), Q: 0.1 to 10 variable
Band Pass Filter	: +/- 18 dB (10Hz up to 20 kHz shelving/bell/notch), Q: 0.1 to 10 variable
Notch Filter	: +/- 18 dB (10Hz up to 20 kHz shelving/bell/notch), Q: 0.1 to 10 variable

DYNAMICS : Interactive one knob control of threshold, compression ratio, expander ratio
as well as attack and release times.

Processing : 32 bit floating point

Channels : 32 stereo channels per DSP card.
Busses : 16 stereo mixing busses, free assignable Prog/CUE/Aux etc. etc.
Monitor busses : 4 stereo monitor busses per DSP card.

Additional information:
By configuration its possible to create more separate mixers, for example two consoles
of 6 stereo channels to 8 stereo mixing busses, 2 stereo monitor busses.
A maximum of 4 DSP cards may be inserted giving you a mixing console of 128 stereo
channels, 16 stereo mixing busses and 16 stereo monitor busses.

Module processing:
- Gain
- Low cut
- Insert
- 6 bands full parametric EQ
- D&R designed one knob dynamics
- 16 buss sends pre or post fader

Overall Level
: 0dBu=0.775Vrms
: 0dB internal = -20 dBFs.

Clock : Sample rate: 32kHz, 44.1kHz, 48kHz, +/- 20ppm
 (internally synchronized)
: External sync: 32kHz, 44.1kHz, 48kHz +/- 50ppm
: Jitter max 150pSec

Power supply : NeutrikTM PowerCon™ (delivered in the package).
: 100-240 Volt, 50/60Hz (1.7A Max)

More detailed Specifications of the Burr Brown A to D and D to A Chips we use can be found on the following link
http://www.ti.com/lit/ds/symlink/src4392.pdf

The Mic card uses the PGA2500 digital mic input chip followed by the 4392 chip as sample rate converter in 24 bits
The Line in card used the PCM 4202 A to D 24 bit converter chip
The Line Out card uses the PCM 4101 D to A 24 bit converter chip

We also confirm that the specs of our console can easily meet or succeed the below specifications for inputs and outputs.
Analog audio input/output, THD+Noise 0.0005% @-20dBFS
Digital audio input/output, THD+Noise 0.002% @-20dBFS
Mic/line input, THD+Noise 0.036% @-20dBFS

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