RAQ & DESQ

SPECIAL PURPOSE CONSOLES FROM AXIA

COMPACT CONSOLES THAT ARE BIG WHERE IT COUNTS.

You love all the flexibility that Axia consoles and a Livewire network bring to your on-air studios. But what about newsrooms, dubbing stations, or other off-air applications? That's where DESQ and RAQ, Axia's new special-purpose IP consoles come in. These six-channel, standalone stereo mixers with networking features are perfect for remote broadcasts, cutaways from clubs, announce booths, home studios, or any place where a compact audio mixer is needed.

ABOUT AXIA

Axia is the AoIP division of Telos Systems, a technology leader in professional audio equipment for radio broadcasters since 1984. In 2003, we introduced the world's first Ethernet-based console system for broadcasting. At the time this was a new idea, but VoIP showed the telecom industry how powerful, flexible and cost-efficient it was to move audio via IP, and the idea caught on fast with broadcasters, too. AoIP (sometimes called IP-Audio) is mainstream technology now, with more than 2,500 radio studios around the world equipped with Axia networks.

PURPOSE-BUILT CONSOLES FOR SPECIAL PURPOSES.

Just tuck DESQ or RAQ on the corner of a desk, or in a 3RU rack space; anywhere you need a little bit of mixer. Yes, they're small, but don't let that fool you. They've got the features of much larger consoles. Like automatic per-fader mix-minus. Built-in EQ available for any voice or codec source. And the ability to instantly load new local or networked sources to any fader with just the turn of a knob. And sharp, high-resolution OLED displays on every channel give you source names and other data at a glance – no paper labels or masking tape needed.

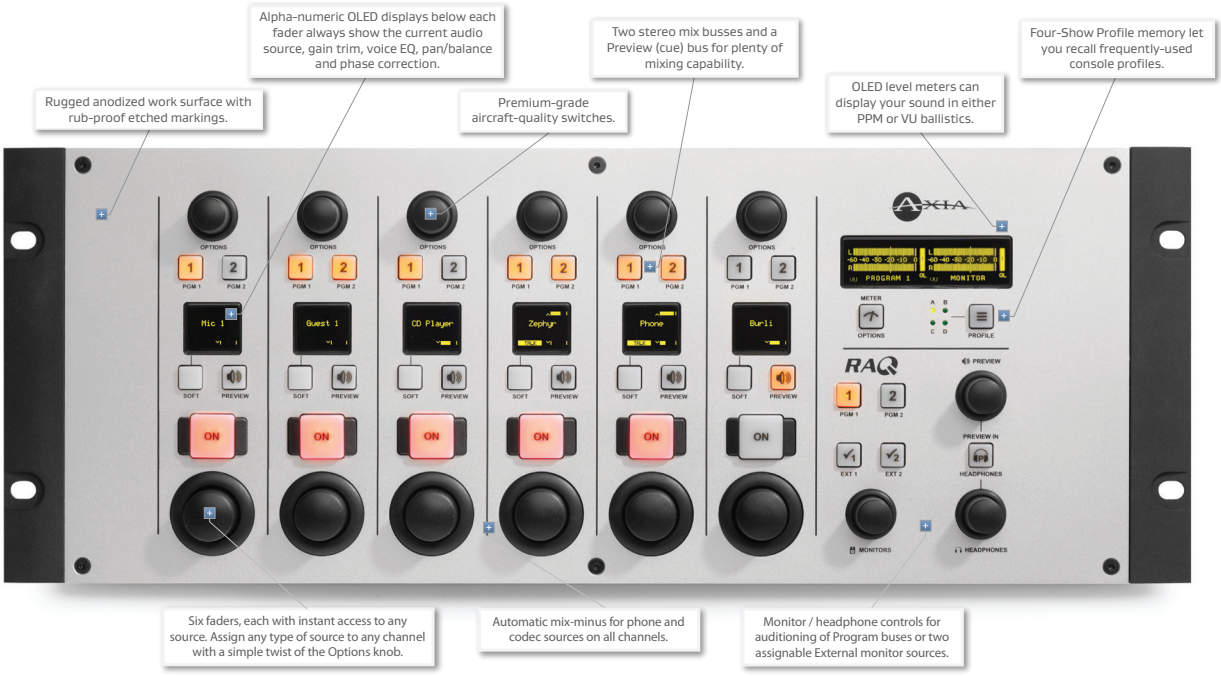
Save presets for your favorite setups to the four Show Profile snapshot locations. One touch, and presto! Your favorite sources are loaded, monitor source configured, and bus assignments made. RAQ and DESQ both have two stereo mixing buses, plus a Preview (cue) bus, which make them the perfect compact utility mixers.

Just as with Axia's bigger consoles, DESQ and RAQ are built tough, to meet Axia's uncompromising engineering standards. With machined aluminum work surfaces, aircraft-quality switches, LED button lamps, premium faders and high-resolution OLED displays, there's no need to baby these babies.

PUT IT IN YOUR RAQ

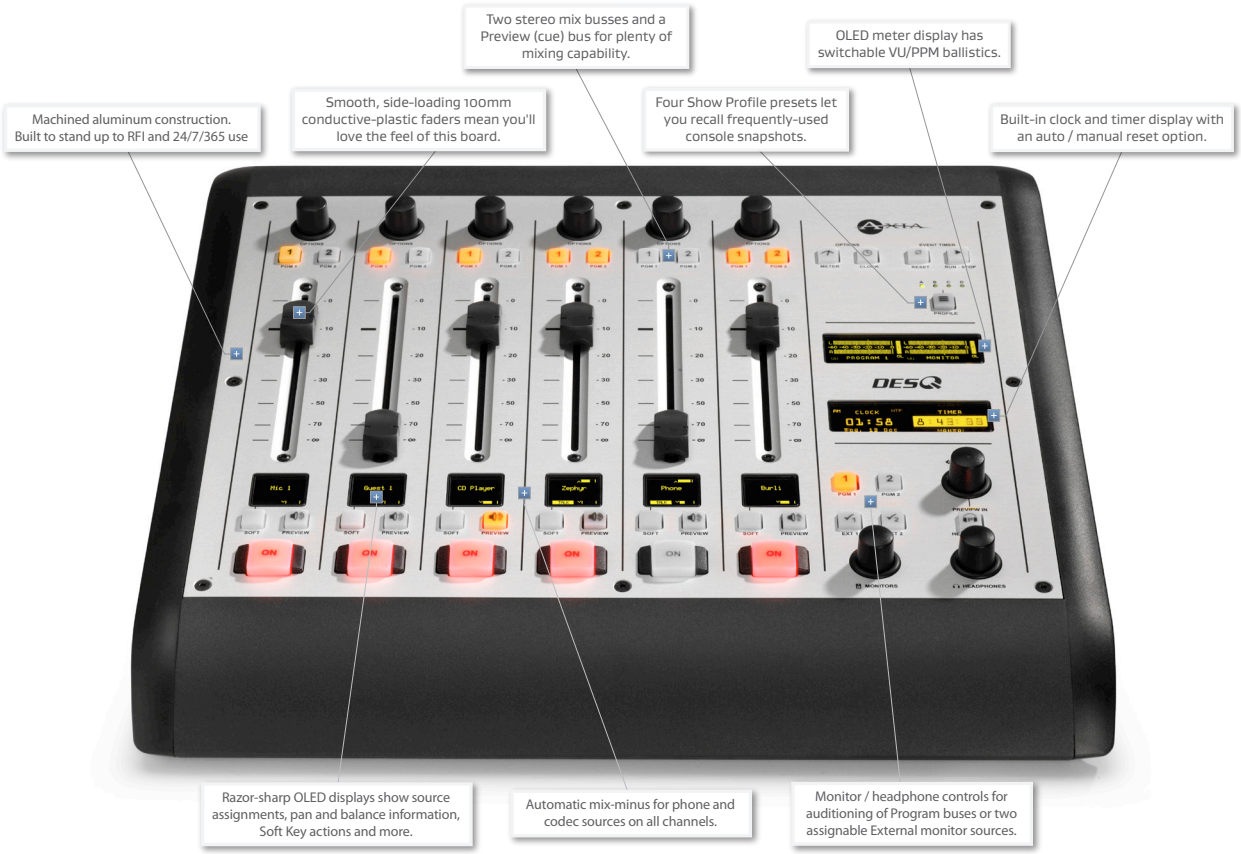
Real estate is tight these days, especially in your equipment racks. Good thing that RAQ takes only three rack units of space. But don't let that small footprint fool you: it's jam-packed with features. You'll find six smooth, accurate rotary faders with push-on/push-off channel switches and OLED channel option displays, and two stereo mixing buses (where most other consoles this size can only fit one). Naturally, there's a Preview (cue) bus, too. RAQ's Show Profile has instant recall of up to 4 pre-defined console "snapshots". Got phones? Axia is part of Telos, so we've got you covered with automatic mix-minus for phone callers and codec sources. There's monitor / headphone controls for auditioning of Program buses and two assignable External monitor source selections, and an OLED meter display with switchable VU / PPM ballistics.

RAQ is tough. With an anodized work surface, aircraft-quality switches and super-duty rotary faders, it can take whatever you dish out. Installation? Just pair RAQ up with our QOR.16 integrated console engine, add sources and be good to go. Or pair two RAQs, or a RAQ and a DESQ (Axia's new desktop mini-console) for multi-console deployment. It only takes one cable to connect the surface to the engine, so setup's done in minutes.



PUT IT ON YOUR DESQ

You want a small IP console with the sonic quality and network connectivity of Axia's larger boards, and you want it to last. DESQ is your answer. With two stereo mixing buses and a Preview (cue) bus, six side-loading 100mm. faders that resist dirt and grunge, and razor-sharp OLED channel options displays, DESQ is the perfect choice for small production studios, remote vehicles or content ingest stations. It can function as a stand-alone console, or network with larger Axia networks. Like its cousin, RAQ, it has an OLED meter display with switchable VU / PPM ballistics, along with monitor / headphone controls let you listen to either Program bus, or two External monitor source selections which can be pre-defined or reassigned on-the-fly. Like all Axia consoles, there's automatic mix-minus on every fader for callers and codec sources. Did we mention the built-in clock and timer display with an auto / manual reset option, and the Show Profiles that instantly recall up to 4 pre-defined console "snapshots"? Thanks to the obsessive nature of our console designers, you'll find quality of construction unparalleled. DESQ has aircraft-quality switches with all-LED lighting, extruded-aluminum work surface and an EM-tight chassis. Easy to install? Absolutely. Just hook it up to our QOR.16 console engine with a single power/control cable, add sources and you're good to go.



FEATURES AT A GLANCE

» 6 faders, each with instant access to any source. Assign any type of source to any channel with a simple twist of the Options knob. **»** Two stereo mix buses and a Preview (cue) bus. **»** Best-in-the-industry 5-year warranty and access to the Axia 24/7 Support hotline — radio never sleeps, and neither do we. **»** Alpha-numeric OLED displays below each fader always show the current audio source with audio confidence meter, and, when the Options knob is pressed, offer fast adjustment of fader gain trim, voice EQ, pan and balance and other features without panel clutter or intimidating controls. **»** Four custom Show Profile "snapshots" can be saved to instantly recall frequently-used console setups – useful to quickly prepare for interview segments, music-intensive programming, call-in talk shows, etc. **»** Proven surface-and-core architecture separates control from mixing processes. No audio passes directly through DESQ or RAQ; all mixing and processing is performed in the QOR.16 Integrated Console Engine – so studio "accidents" don't turn into off-air events. **»** Fan-free, convection-cooled power supply for noiseless in-studio operation. **»** Network gateway enables loading up to 8 sources from the Axia network while exporting up to 8 outputs to the network, simultaneously. **»** Easy-to-deploy QOR.16 integrated console engine includes console CPU and power supply, DSP mixing engine, custom Ethernet switch with 6 Livewire ports and 2 Gigabit ports for studio networking, 8 analog inputs and 4 analog outputs, 1 AES input and 1 AES output, 2 Mic inputs with switchable Phantom power, and 4 GPIO ports for machine control. I/O can be expanded using Axia Audio Nodes. **»** Each QOR.16 can support two connected RAQ or DESQ consoles, or one of each.

FAQS

CAN I GANG TWO DESQS OR RAQS TOGETHER TO MAKE A 12-CHANNEL MIXER?

RAQ and DESQ are special-purpose consoles intended for small spaces. As such, they are fixed at six channels each. If you need more faders, we suggest the eight-fader Axia Radius (www.AxiaAudio.com/Radius/) or the Axia iQ (www.AxiaAudio.com/iq/), which can be expanded up to 24 faders.

THE 5-YEAR WARRANTY IS GREAT, BUT WHAT IF I WANT TO GET MY HANDS DIRTY, OR SOMETHING HAPPENS AFTER FIVE YEARS? DOES AXIA PROVIDE TECH MANUALS WITH SCHEMATIC DIAGRAMS?

All of the normal wear parts, such as faders, switches, rotary encoders, etc., can be replaced should the need arise. But in today's world of surface-mount electronics technology, it's hard (if not impossible) for users to field-service broadcast equipment should something go wrong on a more fundamental level. That said, Axia technical support stands ready to help and we are glad to give estimates or repair services should you ever require them.

YOU SAY THAT DESQ AND RAQ ARE STANDALONE CONSOLES THAT CAN NETWORK. EXPLAIN YOURSELVES.

DESQ and RAQ's integrated console engine, the QOR.16, was designed after listening carefully to clients who asked for an easy way to set up one or two independent studios. It combines audio I/O, machine logic, mix engine, console CPU, Ethernet switch and power supply into one fan-free box. This dramatically cuts setup time, since there's only one piece of equipment to configure. Consequently, you can use DESQ or RAQ to quickly build a self-contained studio that operates all by itself. Of course, if you want to connect your DESQ or RAQ consoles to an IP-Audio network, you can, with one easy Ethernet connection.

I UNDERSTAND THAT DESQ AND RAQ CONNECT TO A "CONSOLE ENGINE" WITH AUDIO I/O BUILT IN. WHAT IF I NEED ADDITIONAL INPUTS OR OUTPUTS? CAN I ADD MORE?

Sure! The QOR.16 console engine comes with enough analog , mic-level and AES/EBU I/O to power a well-equipped small studio. But if you need more, you can plug in Axia audio nodes. They connect with just a single Ethernet cable.

WE ALREADY HAVE SOME STUDIOS BUILT USING OTHER AXIA CONSOLES. WILL DESQ AND RAQ INTERFACE WITH THEM?

Of course! DESQ and RAQ plug right into existing Axia networks, which use standard switched Ethernet for audio and logic transport. This means that DESQ and RAQ will interface with the Axia gear you bought five years ago, as well as Axia equipment you'll purchase at any time in the future.

HOW MUCH I/O DOES THE QOR.16 CONSOLE ENGINE HAVE?

QOR.16 comes with 8 Analog inputs, 1 AES/EBU input, 2 Mic inputs with selectable Phantom power, 4 Analog outputs and 1 AES/EBU output. There are also 4 GPIO ports and 6 Ethernet ports for connection of Livewire-enabled audio devices.

WILL THAT BE ENOUGH I/O FOR A SMALL STUDIO THAT MAY GROW INTO A BIGGER STUDIO?

Clients have been telling us that the growing number of Livewire-ready devices helps shrink the need for conventional I/O. For instance, more than 30 Livewire partners are now making things like profanity delay units, satellite receivers, high-end audio cards and content delivery systems that integrate with Axia networks using an Ethernet cable to transport all audio, logic and messaging. To see a list of Axia partners, visit www.AxiaAudio.com/partners/ . You can also expand I/O using Axia audio nodes as needed.

CAN I LOAD ANY AUDIO SOURCE TO ANY FADER? WHAT ABOUT NETWORKED SOURCES?

Yes, you can. Any source plugged into the QOR.16 engine, or any source available on the Livewire network, can be assigned to any fader on the console.

FAQs

DOES LOGIC FOLLOW AUDIO? WHEN I LOAD A SOURCE TO A FADER, DO THE ON/OFF BUTTONS CONTROL THAT SOURCE?

Yes! In a Livewire system, logic and audio are always routed together. DESQ and RAQ have GPIO ports for machine control of four standard audio devices. If you're using a Livewire device, audio and control travel over the same Ethernet cable, so no additional logic connections are needed.

HOW DOES I/O WORK IF I HAVE TWO RAQ OR DESQ CONSOLES SHARING A SINGLE QOR?

All audio I/O shared, and so is available at any time to either connected console. A "source sharing" interlock prevents a console from taking control of a source that's already in use. The first console has full GPIO control of the selected source; the second console can listen to that source's audio, but cannot control the device. This helps make certain that one operator can't interrupt another operator's program output by turning off an audio peripheral that's on the air.

I'M THINKING ABOUT BUILDING MULTIPLE STUDIOS. HOW MANY CONSOLE ENGINES CAN CONNECT TOGETHER DIRECTLY BEFORE I NEED TO START THINKING ABOUT USING A ETHERNET CORE SWITCH?

There's an Ethernet switch with Simple Networking built into our QOR.16, QOR.32 and PowerStation console engines, and you can daisy-chain up to four of them without the need for an external switch. If your network grows bigger than four console engines, you will need to purchase a switch. When that time comes, ask us and we'll help you select one that's right for your facility's needs.

DO DESQ AND RAQ HAVE A REDUNDANT POWER SUPPLY OPTION?

DESQ and RAQ are designed for smaller studios, with cost-efficiency in mind, so no power backup is available. If redundant power is necessary for you, consider an iQ or Element console, both of which have available backup power options.

I HEARD THAT DESQ AND RAQ ARE MADE IN CHINA. AM I STILL BUYING A QUALITY PRODUCT?

Some console companies seem to think that they can only build an inexpensive console by taking out features until they hit a price point. We disagree. Our philosophy is to see how many capabilities we can cram into a console, and still keep the price low. To do this, both DESQ and RAQ consoles are made in China, in an ISO-9002 facility just like those used to build iPads, Droids, 3D LED TVs, and other high-tech electronics.

BUT YOU USE CHEAP COMPONENTS, RIGHT?

No! We understand that your console is mission critical, and you need to depend on it. So we use only premium components throughout, like high-resolution OLED displays, aircraft-quality switches and buttons, studio-quality faders with a side-loading design to keep dirt out, high-quality mechanical rotary controls and LED lighting under every switch.

YOU KEEP MENTIONING OLED DISPLAYS. WHY IS THAT SUCH A BIG DEAL?

OLED (Organic Light-Emitting Diode) technology is something Axia is pretty excited about. Unlike ordinary LED or LCD displays, OLEDs are high resolution displays that are extremely bright, high contrast, and razor sharp. Axia designers placed an OLED on every channel and packed it full of information.

For instance, press the Options knob at the top of any channel, and the OLED at the bottom lights up. Twist the knob to scroll through a list of audio sources, highlight the one you want, and push again. You can also choose and modify pan, balance and backfeed settings. Adjust source gain. Correct phase errors. Toggle between stereo and summed input modes. The bottom of the OLED displays context-sensitive options such as the ability to Talkback to the selected source, or to momentarily mute the Operator's mic. There are no external monitors to clutter up your studio — all the information your operators need is right below their fingertips.

I HAVE A SMALL STUDIO. DO I REALLY NEED TO WORRY ABOUT ETHERNET?

DESQ and RAQ are easy-to-install consoles for small studios. That's why we put a power supply, CPU, DSP mixing engine, audio I/O, GPIO and Livewire inputs into a single integrated console engine – the QOR.16. So DESQ and RAQ are perfect for standalone studios. But, like all Axia gear, they network too. Small studios don't always stay small. When you're ready to expand, DESQ and RAQ can become part of a larger studio network.

SOME OF QOR.16'S ETHERNET PORTS HAVE POE. WHY?

Because Axia is ready for the future! Many new Ethernet devices use PoE (Power over Ethernet) to eliminate wall-warts or ride-along power supplies. PoE may also help you to ride out brief power interruptions without a UPS. Axia xNode audio interfaces can use PoE, and some of the newest Telos phone gear, like the VX Broadcast VoIP system, use PoE to power the VSet telephones that work with the system. Axia anticipates that a lot of future, connected, broadcast gear will use PoE as well. Microphone Preamplifiers:

SPECIFICATIONS

Like all Axia products, DESQ and RAQ consoles use only premium, studio-grade.

MICROPHONE PREAMPLIFIERS:

- Source Impedance: 150 ohms
- Input Impedance: 4 k ohms minimum, balanced
- Nominal Level Range: Adjustable, -75 dBu to -20 dBu
- Input Headroom: >20 dB above nominal input
- Output Level: +4 dBu, nominal

ANALOG LINE INPUTS:

- Input Impedance: 20 k Ohms
- Nominal Level Range: Selectable, +4 dBu or -10dBv
- Input Headroom: 20 dB above nominal input

ANALOG LINE OUTPUTS:

- Output Source Impedance: <50 ohms balanced
- Output Load Impedance: 600 ohms, minimum
- Nominal Output Level: +4 dBu
- Maximum Output Level: +24 dBu

DIGITAL AUDIO INPUTS AND OUTPUTS:

- Reference Level: +4 dBu (-20 dB FSD)
- Impedance: 110 Ohm, balanced (XLR)
- Signal Format: AES-3 (AES/EBU)
- AES-3 Input Compliance: 24-bit with selectable sample rate conversion, 20 kHz to 216kHz input sample rate capable.
- AES-3 Output Compliance: 24-bit
- Digital Reference: Internal (network timebase) or external reference 48 kHz, +/- 2 ppm
- Internal Sampling Rate: 48 kHz
- Output Sample Rate: 48 kHz
- A/D Conversions: 24-bit, Delta-Sigma, 256x oversampling
- D/A Conversions: 24-bit, Delta-Sigma, 256x oversampling
- Latency <3 ms, mic in to monitor out, including network and processor loop

FREQUENCY RESPONSE:

- Any input to any output: +0.5 / -0.5 dB, 20 Hz to 20 kHz

DYNAMIC RANGE

- Analog Input to Analog Output: 102 dB referenced to 0 dBFS, 105 dB "A" weighted to 0 dBFS
- Analog Input to Digital Output: 105 dB referenced to 0 dBFS
- Digital Input to Analog Output: 103 dB referenced to 0 dBFS, 106 dB "A" weighted
- Digital Input to Digital Output: 125 dB

EQUIVALENT INPUT NOISE

- Microphone Preamp: -128 dBu, 150 ohm source, reference -50 dBu input level

TOTAL HARMONIC DISTORTION + NOISE

- Mic Pre Input to Analog Line Output: <0.005%, 1 kHz, -38 dBu input, +18 dBu output
- Analog Input to Analog Output: <0.008%, 1 kHz, +18 dBu input, +18 dBu output
- Digital Input to Digital Output: <0.0003%, 1 kHz, -20 dBFS
- Digital Input to Analog Output: <0.005%, 1 kHz, -6 dBFS input, +18 dBu output

CROSSTALK ISOLATION, STEREO SEPARATION AND CMRR

- Analog Line channel to channel isolation: 90 dB isolation minimum, 20 Hz to 20 kH
- Microphone channel to channel isolation: 80 dB isolation minimum, 20 Hz to 20 kHz
- Analog Line Stereo separation: 85 dB isolation minimum, 20Hz to 20 kHz
- Analog Line Input CMRR: >60 dB, 20 Hz to 20 kHz
- Microphone Input CMRR: >55 dB, 20 Hz to 20 kHz

POWER SUPPLY AC INPUT, IQ CORE WITH IQ CONSOLE

- Auto-ranging supply, 90VAC to 240VAC, 50 Hz to 60 Hz, IEC receptacle, internal fuse
- Power consumption: 100 Watts

OPERATING TEMPERATURES

- -10 degrees C to +40 degrees C, <90% humidity, no condensation

DIMENSIONS

DESQ

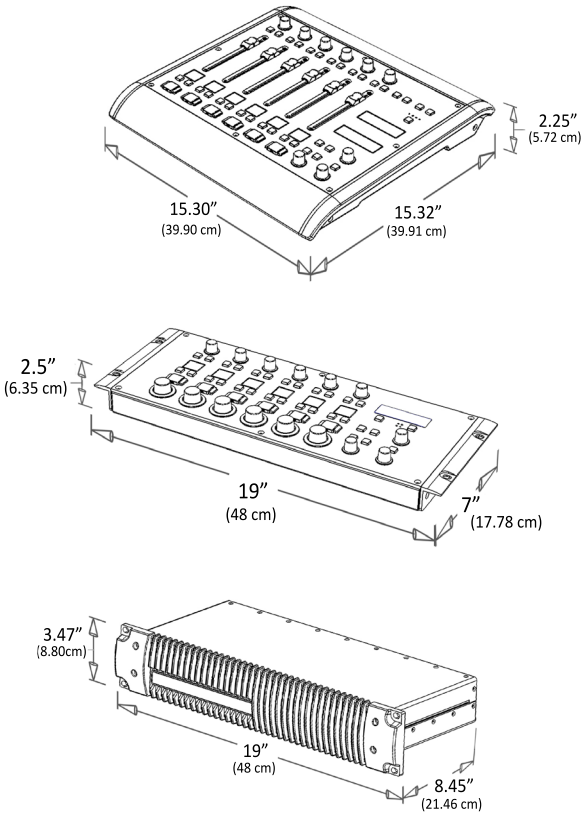
- W 15.31in (388.85 cm), H 15.30 in (388.72 cm), D 2.79 in (57.15 cm)

RAQ

- W 19.0 in (48 cm), H 3RU, 6.97 in (177.0 cm), D 2.54 in (64.50 cm)

QOR.16

- W 19 in (48 cm), H 2 RU, 3.47 in (8.80 cm), D 8.45 in (21.46 cm)



ARCHITECT'S SPECIFICATION

The following specifications shall describe a mini-console intended for portable and field operations. Reliability, ease of service and user friendly operation are primary considerations. The console system must perform to professional broadcast audio specifications described herein. The following specifications listed shall be considered the minimum required.

DESIGN SPECIFICATIONS

The control surface (user interface) shall have six fader channels, each with user-selectable access to all available sources. All system components will be packaged using a machined-aluminum surface and folded steel frame to minimize RFI. Aircraft-quality switches and rotary encoders shall be used throughout. OLED bargraph meters shall have switchable VU or PPM metering styles. Dimmable LED lighting shall be provided in all keys. High-resolution OLED (Organic Light-Emitting Diode) displays shall be provided on every fader. Automatic mix-minus shall be provided on every fader.

All audio input and output connections, Ethernet switch and logic ports shall be provided using an integrated audio engine. There shall be 16 audio I/O ports as follows: two Mic inputs with switchable Phantom power, eight Analog inputs and four Analog outputs, one AES/EBU input and output, four GPIO logic ports for machine control of studio peripherals, six 100Base-T ports for Livewire devices and two Gigabit ports with SFP connections.

This connection must be fully IEEE compliant and compatible with computer-industry-standard hubs, switches, routers, testers, cables, etc. All signals to and from the terminals and processing engine shall be low-latency, linear PCB stereo audio streams in multicast packet format. The protocol for the network audio signals shall be designed to exploit the prioritization capabilities of VoIP Ethernet switches.

The overall input-to-output latency (delay) of the console system shall be less than 4 milliseconds, including the time necessary for mix processing, routing, A/D/A conversion, etc.

ELECTRONIC ARCHITECTURE SPECIFICATIONS

PROCESSING:
A to D: 24-bit resolution minimum.
D to D: AES3-1992 (ANSI S4.40-1992), 24-bitSample Rate Converted
D to A:24-bit resolution minimum.
Sample Rate: 48kHz

STRUCTURE:
Mixing buses: There shall be two stereo mix buses and a Preview (cue) bus. Bus outputs shall be provided as AES-3, analog or Livewire IP-Audio formats.

OUTPUTS (ANALOG OR DIGITAL):
two Stereo Main (PGM1, PGM2), Cue, Mix-Minus, Studio Monitor, one Stereo Headphone.

METERS:
Two OLED bargraph meters switchable between VU or PPM ballistics.

CLOCK/TIMER:
If present, the Timer shall be 4-digit and displayed in the console OLED with manual controls and control-surface selectable automatic mode. The automatic mode shall enable input modules to trigger timer reset and start (via logic) when a source is loaded which has been programmed to reset the event timer when activated.

Time-of-day clock, if present, shall be capable of synchronizing to standard-format NTP messages or capable of free-running. The clock shall be displayed on the console LCD and shall indicate present time in 12 or 24 hour format.

ARCHITECT'S SPECIFICATION

Switching of all audio functions shall occur electronically. No audio shall be present on the control surface panel switches, faders, knobs or encoders. All switches shall be backlit with LEDs to indicate status.

Logic commands to external devices (i.e., CD, Hard Drive Systems) shall be provided via opto-isolated logic connections via the integrated audio engine. All special interfacing requirements to external devices shall be provided on this GPIO device, not external to the console system. All internal console logic commands (i.e., control room speaker muting and preferences) shall be individually programmable for each GPIO port.

Each GPIO port shall be capable of being assigned to any desired source and then activated automatically when that source is loaded into a channel. Each GPIO port will provide the following logic when the port is active.

THE FOLLOWING ARE REQUIRED MINIMUM LOGIC COMMANDS:

- For a GPIO port dedicated to Control Room or Studio Monitor logic:
  - On-Air tally
  - Monitor mute
  - External Preview Input active
- For a GPIO port dedicated to a Microphone source:
  - Remote on; remote off
  - On tally; off tally
  - Mute (cough)
- For a GPIO port dedicated to a Line or Phone source:
  - Remote on; remote off
  - On tally; off tally
  - Start pulse; stop pulse
  - Source Ready
- For a GPIO port dedicated to a Codec source:
  - Remote on; remote off
  - On tally; off tally
  - Mute (cough)
  - Talkback

THE FADER CHANNELS ON THE CONTROL SURFACE SHALL BE EACH CAPABLE OF ANY OF THE FOLLOWING SOURCE TYPES:

- Microphone Host in the Control Room
- Microphone Non-Host in the Control Room
- Normal Line Source
- Phone Source
- Codec Source

Each terminal shall be configured during installation so that each input (and sometimes outputs and GPIO as well, depending on type) is mapped to a unique source and designated as the appropriate source type. Once configured, when the source is loaded, the fader channel attributes and operating style shall conform to the needs of the source type.

THE FADER CHANNELS SHALL EACH OFFER THE FOLLOWING FUNCTIONS FOR ANY SOURCE TYPE:

- An illuminated ON/OFF button below the fader
- Illuminated Program-1, Program-2, and Preview buttons
- Level shall be controlled with a linear fader with100mm of travel, or a rotary fader with at least 270 degrees of adjustment range
- Each fader channel shall also provide an OLED display for source name

Program-1 and Program-2 shall be fed post fader, post on/off.

The Preview function shall provide an interlock so that pressing Preview on one channel de-selects any active Preview on any other channel. It shall be possible to override the interlock by pressing and holding any Preview button and selecting or deselecting (by touching) any other channels.

Each fader channel shall be equipped with an Options knob, the pressing of which shall grant access to channel-specific functions not available on the front panel, such as EQ, PAN,BACKFEED, etc. Control options shall be presented on each channel's OLED display when active.

When either a Host or Non-Host Microphone is loaded into a fader channel, pressing ON shall mute the Control-Room monitors and Preview monitors.

When a Line or Phone source is loaded into a fader channel, the channel shall be capable of sending start/stop pulses to the connected source (if a GPIO port has been dedicated to the source) when the channel is turned on and off.

A channel to which a Phone source is connected shall send a monaural mix-minus to that channel which shall be sourced from Program-1 or Program-2 bus, minus the source. An Auto mode shall be provided so that the mix-minus send will automatically send the Phone bus audio when the channel is off and Program-1 audio when the channel is on, always minus the source. The mix-minus output shall be interruptible with talkback so the operator can easily speak to the callers. The codec source shall provide the same type of mix-minus output but shall also add a second monaural output that shall not be interrupted by talkback audio.