

Introducing iQ

the standalone Axia console – that networks



Easy installation. Fast configuration. Intuitive operation.

Meet iQ, the new IP-Audio console from Axia Audio. Everything's included: control surface, DSP-based mixing engine, audio I/O, machine-control logic, even an Ethernet switch custom-built for IP-Audio. There's an available backup power supply, too. Setup couldn't be simpler: connect the iQ control surface to the Core engine with a single cable, add audio inputs using CAT-5, perform some fast Web-based configuration, and your iQ system is ready to broadcast. It really is that simple!

About Axia networks.

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 2,000 radio studios around the world equipped with Axia networks.

Axia helps you build studio facilities to meet today's most demanding broadcasting applications. With Axia, you can quickly and easily connect a few rooms, or an entire facility. Axia networks have a total system capacity of more than 10,000 audio streams, and can carry hundreds of digital stereo channels (plus machine logic and PAD) over a single CAT-6 cable, eliminating much of the cost normally associated with wiring labor and infrastructure.

For example: a couple of Axia interface nodes, connected together, can move a group of audio signals over an Ethernet cable from one room to another. Connect with fiber and you can go across campus. Attach a few more nodes and a switch and you have a distributed multi-room routing switcher. Plug in a mixing surface and console engine to add a powerful networked broadcast console. Add intercom stations for broadcast-quality plant communications that can be taken to air. Plug in your delivery system PC and you can transfer files, live audio, and associated data all over the same network. And since Axia audio is networked, Analog and digital signals are merged seamlessly; cross-point switching from any source to any destination is fast and easy.

But there's much more to Axia than just the network. Once all of your consoles, peripheral devices and computer workstations are connected together for unlimited sharing, it's easy to add phone systems, audio processors, codecs, satellite receivers, program delay units, or any audio device from the ever-growing list of Axia Partners. All of these devices work together in tight integration, which leads to more intuitive and intelligent operation. By taking advantage of the efficiencies of computer networking, Axia simplifies, saves you money, gives you choices, and prepares you for the computer and data-centric studios of today — and tomorrow.

What's beneath the surface.

Like all Axia systems, iQ is customizable and scalable. The 20-input QOR.32 integrated console engine supports from 8 to 24 faders. Start with the eight-fader iQ Main Frame, then add expansion frames with more faders and capabilities to tailor iQ to your studio's needs. iQ is perfect right out of the box for standalone studios. But, because it's from Axia, it networks too: a Gigabit Ethernet connection allows you to load up to 12 audio streams from other studios, while sending up to 4 of your own streams to the network for use elsewhere. Simple Networking lets you daisy-chain up to 4 iQ Cores without the need for an external Ethernet switch.

iQ has three stereo Program buses, plus a fourth stereo Program / Phone bus, Record Mode one-touch off-air recording, automatic mix-minus (clean feed) for every fader, countdown event timer, and one-button access to up to four Show Profiles for instant "snapshot" recall of frequently-used console settings. Talkback functions let operators communicate with talent, guests, remote hosts and telephone callers. Like all Axia consoles, iQ is over-engineered for long life with silky-smooth conductive-plastic faders, long-life rotary encoders, high-resolution OLED meter and channel displays, aircraft-quality switches with LED lighting, beefy RF-proof extruded-aluminum frames, and anodized surfaces with laser-etched markings that can't ever rub off.

The iQ System



iQ Main Frame:

The heart of your iQ console; can be installed as a standalone console or connected to an Axia studio network. Has three dedicated stereo Program buses, plus a stereo utility bus that can be used for phone calls, off-air recording, or as a fourth Program bus, eight faders, automatic per-fader mix-minus, high-rez OLED program meters and channel displays, Studio and Control Room monitor controls and an integrated Talkback system. For bigger consoles, add one or more iQ expansion frames to build boards of up to 24 faders. Flexible mounting system allows desktop, drop in and even rack-mounted operation.



iQ 6-Fader expansion frame with User Keys:

Puts machine control and GPIO triggered routing commands at your operators' fingertips with this iQ expansion frame. In addition to six additional faders, 10 User Keys can be software-mapped to control audio delivery systems, send contact closures or route GPIO commands to studio devices.



iQ 8-Fader expansion frame:

Double the size of your iQ instantly! Plugs into the QOR.32 integrated console engine to add eight more faders to your iQ Main Frame. Like all iQ frames, it comes equipped with Axia's rugged anodized machined-aluminum surface, conductive-plastic faders, aircraft-quality switches and LED key back-lighting.



QOR.32:

The QOR.32 integrated console engine is a DSP-based mixing engine with onboard I/O, GPIO, console power supply and custom-built, configuration-free Ethernet switch. You'll find plenty of I/O, including 4 mic inputs with selectable Phantom power, 16 analog inputs, 2 AES/EBU inputs, 8 Analog outputs, 2 AES/EBU outputs, 8 GPIO machine-control logic ports (each with 5 opto-isolated inputs and 5 outputs), and that powerful integrated Ethernet switch with 6 Livewire 100Base-T ports (4 with PoE), 2 Gigabit ports (RJ-45 & SFP), and 4 CANBus ports for console expansion. That's a lot of I/O, but if you need more you can instantly add it just by plugging in Axia Audio Nodes. And QOR.32 is convection-cooled for utterly silent, fan-free operation.



iQ 6-Fader Telco expansion frame:

Puts integrated phone system control right where it belongs: on the console, to help eliminate distractions and errors. Along with six long-life faders, this frame includes on-the-board hybrid controls for our new Telos iQ6 six-line telephone hybrid (more details opposite). The learning curve is low: exclusive Telos Status Symbol readouts on sharp-as-a-tack OLED displays, along with familiar twin hybrid controls, make easy work of busy call-in segments.



QOR Backup Power Supply:

Want more power? You've got it. This hardened, auto-switching power supply is perfect for facilities where redundant power backup is required. Connects to your QOR.32 in less than a minute with a single cable that supplies failsafe backup power with automatic switchover should the need ever arise.



Fader Channels:

iQ is intuitive and easy to operate, whether your talent are seasoned professionals or just learning. Options knob gives fast access to source selection, pan & balance, and other frequently-used controls. High-resolution OLED (Organic Light-Emitting Diode) displays show source name and status information; context-sensitive Soft key changes function to match the selected audio source. Smooth conductive-plastic faders, LED button lighting and long-life rotary encoders.



Telco Controls:

Built-in hybrid switching controls on the iQ Telco expansion frame work seamlessly with Telos iQ6 6-line broadcast telephone system, or Telos VX broadcast VoIP system. Familiar Telos dual hybrid controls make line selection simple; OLED displays and exclusive Status Symbols™ icons give line status info at a glance. Includes dial pad, Next, Xfer, Block and Hold keys plus Dump control for external delay.



"User" Keys:

10 programmable buttons on the iQ 6-Fader expansion frame can be used to trigger GPI and GPO machine-logic commands for control of studio peripheral audio devices, or to trigger GPIO contact closures or simple routing commands



Monitor Section:

Full-featured Monitor controls let talent audition any Program bus, or two external sources you define. "Talk To" keys allow operator to communicate with in-studio guests, or to any remote codec or Phone caller using Talk To Backfeeds function. One-touch Record Mode, Show Profile control, meter options and timer controls complete the package.

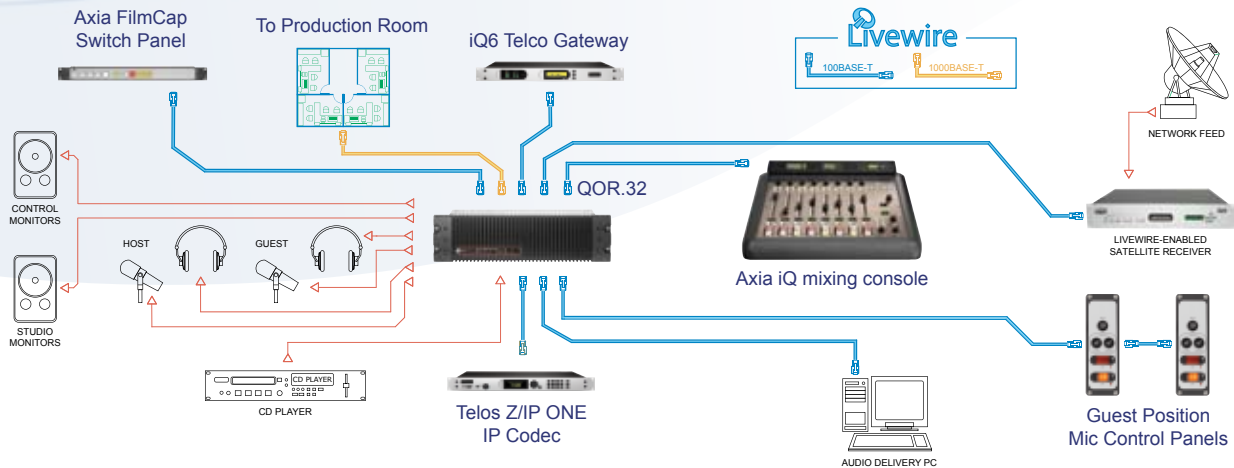


Easy, no-hassle setup, for studios big or small.

The QOR.32 integrated console engine includes onboard audio I/O, GPIO logic, console CPU, mix engine, and a purpose-built, zero-configuration Ethernet switch designed expressly for IP-Audio broadcasting.

So all you have to do is connect console and Core, add inputs, name your sources and start broadcasting. Whether you're installing it at the center of a single studio or as part of a larger networked facility, you'll be pleased to find that iQ's hassle-free installation helps get you on the air faster than any other IP console.

Fast IP Installation



Easy standalone installation. Scalable studio networking.

iQ comes equipped with the latest Axia technology — the QOR.32. It's much more than just a simple power supply: QOR.32 is a self-contained, integrated console engine. Its rock-solid, EM-tight chassis houses an ultra-reliable DSP mixing platform (not a common PC motherboard) and a hardened power supply designed for unfailing service. In addition, QOR.32 contains all the audio and logic I/O you need for a good-sized studio: mic inputs with switchable Phantom power, plenty of analog ins and outs, two pair of AES/EBU inputs and outputs, and four GPIO ports for machine logic control of your studio devices. (Of course, if you need more I/O, it's yours — just connect Axia Audio Nodes to add I/O a la carte.

But that's not all. Even though iQ is the perfect standalone console, it's from Axia — so naturally, it networks. QOR.32 also hosts a built-for-broadcast, zero-configuration Ethernet switch, so you can plug in Livewire network devices like phone systems, remote codecs, audio processors, playout systems, satellite receivers and more. One CAT-5 connection provides the pathway for all required audio and control data. There are two Gigabit ports too, so you can connect to other studios if you want. Simple Networking lets you daisy-chain up to four QOR.32s without the need for an external Ethernet switch.

QOR.32 and the iQ Backup power supply are fan-free, too, for utterly silent in-studio operation.



Flexible mounting options.

iQ was designed to sit right on your desktop - no holes to measure or countertops to cut (although you can flush-mount it if you like). Multiple frames can be left separate, or easily joined using included hardware. You can even mount iQ Main Frame in a rack — special faders slide smoothly, but stay put for vertically-mounted operation.



Information Rich.

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. iQ designers placed an OLED at the bottom of every fader and packed it with information: audio source display and selection, pan, balance and backfeed settings, monitor and source gain settings and more. No external monitors to clutter up your studio — iQ puts the information your operators need right where they expect it to be.



Plug-and-play multi-line phone integration

Up to now, adding phone support to your console could be time-consuming. iQ6, the Telco gateway from Telos designed for iQ, makes it simple: one CAT-5 connection and hookup's done.

iQ6 works with the iQ 6-Fader Telco expansion frame to give operators seamless, on-console control of incoming lines and callers. Take calls, dial out, step through pre-screened callers without ever taking your hands or eyes off the board. Telos Status Symbols icons tell you what's what with just a glance.

You want off-console control? No problem. iQ6 also works with the built-in soft phone that's part of Telos' new VX Producer software, or the Telos VSet12 phoneset.

iQ6 accepts POTS or ISDN phone lines, and comes equipped with two 3rd-generation Telos hybrids with Digital Dynamic EQ. iQ6 also has new AEC Advanced Echo Cancellation from Fraunhofer Labs to eliminate open-mic feedback for hands-free conversations.

Since it's part of the iQ system, iQ6 saves you money and time. It plugs right into your QOR.32, eliminating the cost of discrete I/O, cabling and soldered connectors — one skinny CAT-5 cable carries six lines' worth of audio, hybrid control and backfeed.

Features at a glance



- ▶ From 8 to 24 faders, each with instant access to any source. Assign any type of source to any channel with a simple twist of the Options knob.
- ▶ Four main stereo outputs (Program-1 through Program-4).
- ▶ Built-in EQ for “sweetening” of microphone sources.
- ▶ Alpha-numeric OLED displays below each fader always show the current audio source, and, when the Options knob is pressed, offer fast adjustment of fader gain trim, voice EQ, pan and balance, phase correction and other features without panel clutter or intimidating controls. Channel-input confidence meters assure talent of audio presence.
- ▶ Each channel is equipped with a context-sensitive Soft key which can be used to activate talkback start delivery system events, or other special functions.
- ▶ Every channel has a stereo Preview (“cue”) function, with a unique interlock system for fast cuing of multiple sources.
- ▶ Smooth, long-life 100mm. conductive-plastic are of side-loading design to protect against dirt and contaminant entry.
- ▶ Reconfigurable CR monitor section with direct-selection of Program buses and reassignable buttons that allow monitoring of external sources.
- ▶ An additional monitor section provides monitor volume, source selection and Talkback controls for an associated air studio.
- ▶ Flexible talkback system lets board op talk to studio guests or any Phone or Codec source with an associated backfeed.
- ▶ Up to 8 automatic mix-minuses may be used simultaneously for phones, remote talent, etc.
- ▶ A unique Record Mode enables one-button setup of record mixes for phone bits or off-air interviews.
- ▶ High-resolution OLED displays provide responsive, readable VU or PPM metering styles. Displays can be switched to display 2, 3 or 4 meters at once.
- ▶ Meter-bridge display includes a precision event timer that may be operated manually or triggered by starting pre-selected sources, and a time-of-day clock that can be synchronized to network time using NTP.
- ▶ 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.
- ▶ All functions can be accessed remotely for configuration, management and diagnostic purposes using any standard Web browser.
- ▶ Multiple iQ frames can be joined to produce a single, large control surface, or operated separately as desired.
- ▶ iQ Main Frame is field-convertible to rack-mounted operation. Special faders provide smooth operation, yet hold their positions in vertical orientation.
- ▶ Optional Telco Expansion frame provides direct, on-the-console control of Telos iQ6 six-line telephone hybrid or Telos VX Talkshow system. High-resolution OLED displays use exclusive Telos Status Symbols for instant call status information. Telco section also includes a Dump key to trigger a user-supplied profanity delay unit using GPIO closures.
- ▶ Easy-to-deploy QOR.32 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, 16 analog inputs and 8 analog outputs, 2 AES inputs and 2 AES outputs, 4 Mic inputs with switchable Phantom power, and 8 GPIO ports for machine control. I/O can be expanded using Axia Audio Nodes.
- ▶ Fan-free, convection-cooled power supply for noiseless in-studio operation.
- ▶ Optional backup power supply with automatic failover for complete peace of mind.
- ▶ Network gateway enables loading up to 12 sources from the Axia network while exporting up to 4 outputs to the network, simultaneously.
- ▶ Proven surface-and-core architecture separates control from mixing processes. No audio passes directly through iQ; all mixing and processing is performed in the QOR.32 Integrated Console Engine – so studio “accidents” don’t turn into off-air events.

FAQ's

How many faders can an iQ have?

iQ starts with 8 faders. You can add on fader modules to make consoles of up to 24 faders.

I see that iQ connects to a “console engine” with audio I/O built in. What if I need more inputs or outputs than what's provided? Can I add more?

Sure! iQ's QOR.32 console engine comes with ample analog, mic-level and AES/EBU I/O for any medium-sized studio. But if you need more, you can plug in Axia audio nodes. They connect with just a single Ethernet cable.

Ethernet? I have a small studio. Why do I need a fancy network?

iQ was designed as an easy-to-install console for small and medium-sized 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.32. So iQ is perfect for standalone studios. But, like all Axia gear, it networks, too. So if your studios expand, you can make iQ part of a studio network.

How much I/O does iQ's console engine have?

QOR.32 comes with 16 Analog inputs, 2 AES/EBU inputs, 4 Mic inputs with selectable Phantom power, 8 Analog outputs and 2 AES/EBU outputs. There are also 8 GPIO ports and 6 Ethernet ports for connection of Livewire-enabled audio devices.

Are you sure that's enough I/O for an on-air 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 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/.

What if I need more I/O than is built-in to the iQ QOR?

No problem; it's easy to expand your I/O by adding an Axia audio node. In fact, you can connect as many as 6 Livewire devices to any QOR.32. Even your playout or production PCs that use the Livewire Audio Driver can plug into the Ethernet ports on the back of each QOR.32.

OK, what if I want to connect two iQs together? Do I need an Ethernet switch?

Not necessarily. There's an Ethernet switch with Simple Networking built into iQ's QOR.32 engine, so you can daisy-chain up to four consoles without the need for an external switch. If your network grows bigger than four consoles, you will need a switch – just ask us and we'll help you select one that's right for your facility's needs.

We have some studios built with other Axia consoles. Will iQ work with them?

Absolutely! iQ plugs right into existing Axia networks, and other Axia gear connects to and works seamlessly with iQ. All Axia products use standard switched Ethernet for audio and logic transport. This guarantees that our future products will always work perfectly with even the earliest Axia equipment.

Someone told me that iQ can't load very many networked inputs. Is that true?

Actually, iQ's gateway lets you load as many as 12 audio sources from the network, i.e., sources located outside your studio. You can also simultaneously share up to four sources for use in other studios. iQ is a self-contained, standalone console. But, because it's made by Axia, it networks, too! If 12 networked sources are too few for your needs, consider iQ's “big brother,” Element 2.0 – it can load up to 80 networked sources at a time.

Can I load any audio source to any fader? What about networked sources?

Yes, you can. Any source plugged into the QOR.32 engine, or any source available on the Livewire network, can be assigned to any fader on the console.

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. iQ has GPIO ports for machine control of eight 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.

Does iQ have a redundant power supply option?

Yes. The QOR Backup plugs into the QOR.32. And because QOR.32 is an integrated console engine, it protects not just the console, but the audio inputs, the Ethernet switch and the mix engine, further ensuring your studio's uptime. As far as we know, no other console company provides this level of power backup.

I heard iQ is made in China. Why?

Some console companies seem to think that they can only build an inexpensive console by taking out features until they hit a price point. Our philosophy is just the opposite: to see how many capabilities we can pack into a console, and still keep the price low. To do this, iQ is being fabricated 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 used cheaper components, right?

No! We understand that your console is the critical link in your studio. So we use only premium components throughout, like high-resolution OLED displays, aircraft-quality switches and buttons, 100mm. conductive-plastic faders with side-loading design to keep dirt and grunge out, high-quality mechanical rotary controls and LED lighting under every switch.

What about construction? Your competition says iQ looks “plasticky.”

Like all Axia consoles, iQ is made of RF-proof steel and machined aluminum. As with all broadcast mixers (even those made by our competitor!), iQ has some plastic parts – the molded end bumpers, for example, and the clear meter overlay, and of course the fader knobs and channel switches. But unlike those consoles, iQ's mixing surface is made of machined, anodized aluminum with laser-etched markings. That means there's no plastic overlay to crack, curl or peel, and no paint markings to rub off, ever.

You say that iQ is a “standalone console that networks.” What does that mean?

iQ's integrated console engine, the QOR.32, 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 (with optional power redundancy) into one fan-free box. This dramatically cuts setup time, since there's only one piece of equipment to configure. Consequently, you can use iQ to quickly build a self-contained studio that operates all by itself. Of course, if you want to connect your iQ studio to an IP-Audio network, you can, with one easy Ethernet connection.

Some of iQ's QOR.32 Ethernet ports have PoE. Why?

Many new Ethernet devices use PoE (Power over Ethernet) to eliminate wall-warts or ride-along power supplies. 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.



iQ Specifications

Like all Axia products, iQ uses only premium, studio-grade audio components to guarantee maximum fidelity.

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

Total Harmonic Distortion + Noise (Cont.)

- 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 kHz
- 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

Audio Processing

- Mic Equalizer (applicable to up to 6 faders)
- Frequency Bands: 20Hz to 320Hz, 125Hz to 2KHz, 1.25KHz to 20KHz.
- Cut/Boost range on each band: -25dB to +15dB.
- Q-factor: Automatic - bandwidth varies based on amount of cut or boost.

Power Supply AC Input, iQ Core with iQ Console

- Auto-sensing supply, 90VAC to 240VAC, 50 Hz to 60 Hz, IEC receptacle, internal fuse
- Power consumption: 300 Watts (Preliminary Estimate)

Operating Temperatures

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

Dimensions

- iQ Main Frame 20.5" x 19" x 4.5" (desktop to meter bridge)
- iQ Expansion Frames 17.5" x 18.25" x 3" (desktop to tallest control)
- iQ Core 5.25" x 19" x 15"
- iQ Backup 2.625" x 19" x 15"

iQ Main Frame (8 faders + monitor controls)

