



Q-Sys™ is a complete integrated system that encompasses everything from the audio input to the output of the loudspeakers; it provides all the routing, processing, control and monitoring, while maintaining the audio quality and reliability QSC has come to be known for.

The Core and I/O Frame are the fundamental elements of a Q-Sys system. The Core is the brain of the system; it performs all the audio routing and processing and handles all control functions. The I/O Frames are the local inputs and outputs of a system; each Frame can house four I/O cards enabling up to 16 channels of input and/or output in a single unit. Combining QSC DataPort amplifiers with the DataPort output card enables complete end-to-end monitoring and control. Adding QSC loudspeakers to the mix provides greater control, heightened acoustic performance, and increased reliability by enabling functions such as automatic deployment of advanced processing and speaker fault detection.

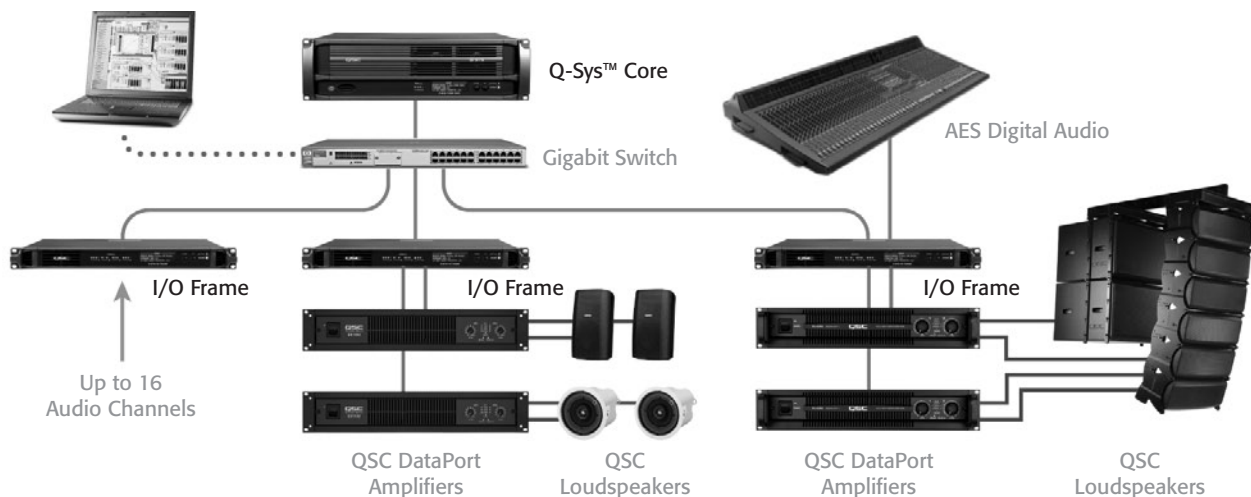
One of the primary development goals was to create a platform that had nearly unlimited resources; Q-Sys truly lives up to that goal with unrivaled processing breadth and depth. The design interface was created specifically to harness its unmatched power while remaining intuitive and easy to use. The processing tools are extensive and simple to apply. Once the system is designed, you will find that Q-Sys also offers a useful suite of trouble shooting and measurement tools.

Q-Sys provides extensive levels of system control which can be as simple or sophisticated as the application requires. Advanced control functions are easily created by simply connecting Control Functions in the Q-Sys Designer environment. Controls include an extensive selection of Functions and Scripts that may be used to define automated or user-initiated actions. These actions may be set to control internal Q-Sys parameters as well as external devices via (for example) GPIO. Snapshots of any or all controls can be created and recalled, or when a richer user interface is needed, custom control panels are easily created and published by the Core to any network device that supports browsers. Finally, IP-based external control protocol can be used in conjunction with 3rd party controllers for truly limitless control capabilities.

Q-Sys is a powerful and reliable unified system that features rock-solid performance backed by the unrivaled service and support QSC has built its reputation on. For more information please visit www.qscaudio.com/products/network/QSys.

Features

- Centralized processing architecture simplifies signal routing.
- Cores are available in three sizes based on channel capacity.
- Premium 24-bit AD and DA conversion used throughout.
- Abundant DSP capacity for the largest and most demanding installations.
- Intuitive and easy to use design GUI.
- Uses standard Gigabit Ethernet hardware for audio transport and control.
- System seamlessly integrates with QSC amplifiers and loudspeakers.
- Multiple levels of system redundancy are supported ranging from network-only to complete hardware redundancy including amplifiers.
- I/O Frames may be located with the Core or remotely – whichever best suits the needs of the installation.
- I/O Frames may be equipped with a variety of audio input and output cards.
- Q-Sys technical support is available 24/7 – worldwide.



System Hardware	Core 1000 Core 3000 Core 4000			I/O Frame
Description	System processor and control engine			System audio input and output device
Front Panel Controls	LCD page forward momentary switch Unit ID button momentary switch Clear settings momentary switch			LCD page forward momentary switch Unit ID button momentary switch Clear settings momentary switch
Front Panel Card Receptacle	SD (secure digital) standard size media			–
Front Panel Indicators	Power On: Blue LED Device Status: Tri-color LED Audio Signal: Five tri-color LEDs 240 x 64 monochrome LCD graphics display			Power On: Blue LED Device Status: Tri-color LED Audio Signal: Five tri-color LEDs/per I/O card slot 240 x 64 monochrome LCD graphics display
Rear Panel Connectors	RS-232: DE-9 (male 9-pin D shell connector) Video Out: HD-15 (female 15-pin D shell connector) Aux ports AUX A set: USB host x2, RJ45 10/100/1000 MBps Aux ports AUX B set: USB host x2, RJ45 10/100/1000 MBps GPIO A: DA-15 (female 15-pin D shell connector) GPIO B: DA-15 (female 15-pin D shell connector) Q-Sys Network LAN A: RJ45 1000 MBps only Q-Sys Network LAN B: RJ45 1000 MBps only			RS-232: DE-9 (male 9-pin D shell connector) GPIO A: DA-15 (female 15-pin D shell connector) Q-Sys Network LAN A: RJ45 1000 MBps only Q-Sys Network LAN B: RJ45 1000 MBps only
Capacity				
Network Audio Channels In	64	128	128 – 512 ¹	–
Network Audio Channels Out	64	128	128 – 512 ¹	–
Maximum Channels Out ²	1024	2048	2048	–
End Node Capacity	128	256	512	–
Processing (Channels of 32-bit audio)	128	256	512	–
I/O Capacity	Up to 4 channels. Requires purchase of I/O cards			Up to 16 channels ³ . Requires purchase of I/O cards.
Line Voltage Requirements	100 VAC – 240 VAC, 50 – 60 Hz			100 VAC – 240 VAC, 50 – 60 Hz
Current Draw	2.3A (120V mains) 2.8A (120V mains) 2.8A (120V mains)			625mA (120V mains)
Thermal	785 BTU/h (typical) 950 BTU/h (typical) 950 BTU/h (typical)			205 BTU/h (typical)
Dimensions (HWD)	5.25" x 19" x 15" (133.35 mm x 482.6 mm x 381 mm)			1.75" x 19" x 15" (44.45 mm x 482.6 mm x 381 mm)
Accessories Included	6 ft UL/CSA/IEC line cord • User manual • Software CD • Optional audio I/O ship kit			6 ft UL/CSA/IEC line cord • User manual • Optional audio I/O ship kit

1) Up to 512 network audio channels when sending 8 or more channels per network audio stream.

2) Using maximum fan-out with 16-channel unidirectional I/O Frames.

3) The CAES4 card (AES-3 input/output) doubles the audio channel count of any slot in which it is used.

Minimum System Requirements for Q-Sys™ Designer

Software

- Microsoft® Windows® Vista® SP1
- Microsoft® Windows® XP® Professional Version 2002 SP3
- Microsoft® .NET Framework 3.5 SP1

Hardware

Windows Vista Home Premium / Business / Ultimate

- 1 GHz 32-bit (x86) or 64-bit (x64) processor
- 1 GB of system memory
- 40 GB hard drive with at least 15 GB of available space
- Support for DirectX 9 graphics with:
 - » WDDM Driver
 - » 128 MB of graphics memory (minimum)
 - » Pixel Shader 2.0 in hardware
 - » 32 bits per pixel
- CD-ROM or DVD drive
- Keyboard and Microsoft® Mouse or compatible pointing device

Windows XP Professional

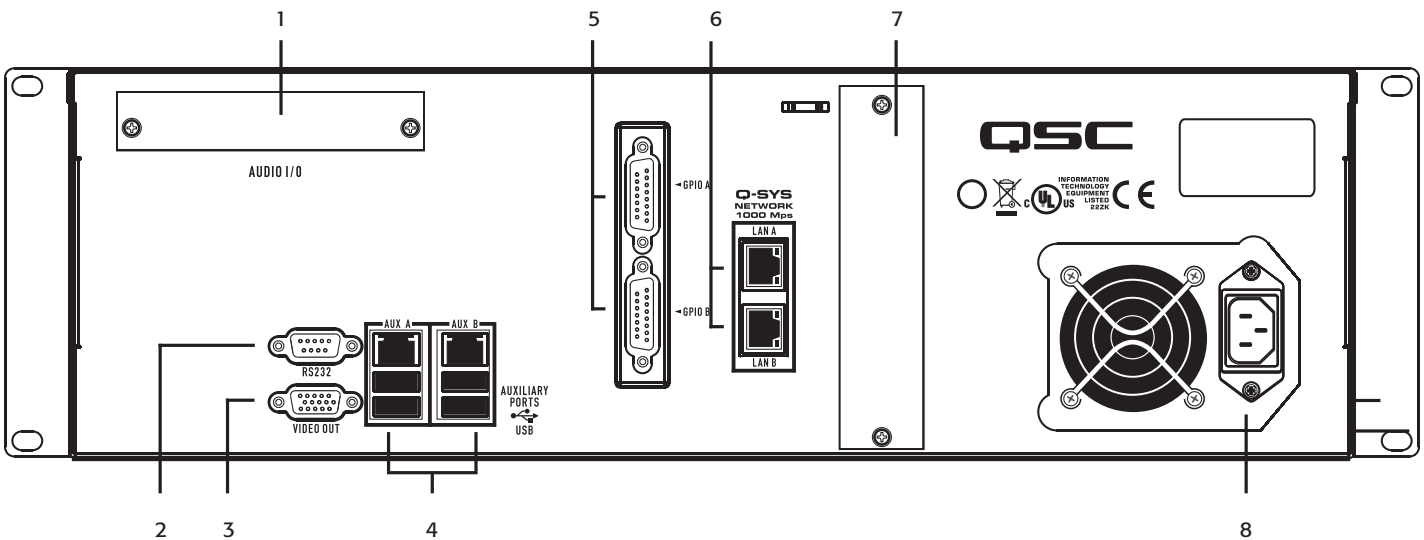
- PC with 300 megahertz or higher processor clock speed recommended; 233 MHz minimum required (single or dual processor system); Intel® Pentium®/Celeron® family, or AMD K6®/AMD Athlon®/AMD Duron® family, or compatible processor recommended.
- 128 megabytes (MB) of RAM or higher recommended (64 MB minimum supported; may limit performance and some features)
- 1.5 gigabytes (GB) of available hard disk space
- Super VGA (800 x 600) or higher-resolution video adapter and monitor
- CD-ROM or DVD drive
- Keyboard and Microsoft® Mouse or compatible pointing device

I/O Card Specifications

I/O Cards	Mic/Line Input CIML4	High-Performance Mic/Line Input CIML4-HP	Line Output COL4	DataPort Output CODP4	AES-3 Input/Output CAES4
Description	Four channels of microphone/line-level analog audio input with 48V phantom power	Four channels of microphone / line-level analog audio input with 48V phantom power and high performance pre-amplifiers and A/D converters	Four channels of balanced, line-level analog output	Four audio output channels (2 DataPorts) for connection to DataPort equipped QSC amplifiers	Four input and four output channels of AES-3 digital audio
Performance					
Dynamic Range Unweighted	> 105 dB	> 112 dB	> 112 dB	> 114 dB	–
Dynamic Range A-weighted	> 108 dB	> 115 dB	> 115 dB	> 117 dB	–
Distortion 20 Hz – 20 kHz +4 dBu (nominal input)	< 0.009% THD+N	< 0.004% THD+N	–	–	–
Distortion 20 Hz – 20 kHz 2 dB below clip (max)	< 0.08% THD+N	< 0.06% THD+N	< 0.004% THD+N	< 0.004% THD+N	–
Crosstalk 20 Hz – 20 kHz					
Inter-channel (max)	> 100 dB	> 110 dB	> 100 dB	> 95 dB	–
Inter-channel (typ)	> 110 dB	> 110 dB	> 110 dB	> 100 dB	–
Intra-channel (max)	> 100 dB	> 110 dB	> 100 dB	> 100 dB	–
Intra-channel (typ)	> 110 dB	> 110 dB	> 110 dB	> 110 dB	–
Frequency Response 20 Hz – 20 kHz (max)	± 0.5 dB	± 0.5 dB	± 0.5 dB	± 0.5 dB	–
Frequency Response 20 Hz – 20 kHz (typ)	± 0.2 dB	± 0.2 dB	± 0.2 dB	± 0.2 dB	± 0.2 dB
Input Impedance					
Balanced (nominal)	10 k ohms	10 k ohms	–	–	–
Unbalanced (nominal)	10 k ohms	10 k ohms	–	–	–
Common Mode Rejection 20 Hz – 20 kHz (max)	> 45 dB	> 45 dB	–	–	–
Common Mode Rejection 20 Hz – 20 kHz (typ)	> 50 dB	> 50 dB	–	–	–
Max Input Level	0.123, 2.25, 8.70, 17.35 Vrms -16, 10, 21, 27 dBu -18.2, 7.04, 18.8, 24.78 dBv (4 selections)	1.23 to 17.35 Vrms -56 to 27 dBu -58.2 to 24.8 dBv (continuously variable)	–	–	–
Mute	Infinite attenuation (via digital mute)	Infinite attenuation (via digital mute)	Infinite attenuation (via electro-mechanical relays)	Infinite attenuation (via electro-mechanical relays)	Infinite attenuation (via digital mute)
Audio Converters					
Analog to Digital Conversion (ADCs)	24-bit delta-sigma at 48 or 96 kHz sample rate	24-bit delta-sigma at 48 or 96 kHz sample rate	–	–	–
Digital to Analog Conversion (DACs)	–	–	24-bit delta-sigma at 48 or 96 kHz sample rate	24-bit delta-sigma at 48 or 96 kHz sample rate	–
Group Delay	< 13 FS (≈ 271 μs) at 48 kHz	< 13 FS (≈ 271 μs) at 48 kHz	< 10 FS (≈ 196 μs) at 48 kHz	< 13 FS (≈ 271 μs) at 48 kHz	< 37 FS (≈ 760 μs) at 48 kHz*
Connectors	Four 3-terminal Euro-style detachable terminal blocks	Four 3-terminal Euro-style detachable terminal blocks	Four 3-terminal Euro-style detachable terminal blocks	Two 15-pin HD15 connectors	Four 3-terminal Euro-style detachable terminal blocks
User-configurable Options (software enabled)					
Phantom Power	+48 V phantom power (meets IEC 1938 [1996] spec)	+48 V phantom power (meets IEC 1938 [1996] spec)	–	–	–
Output Trim					
Vrms (max)	–	–	8.7V	–	–
dBu (max)	–	–	21 dBu	–	–
dBv (max)	–	–	18.8 dBv	–	–
Amplifier Standby	–	–	–	Set or clear amplifier in standby mode	–
Mute	–	–	–	Set or clear individual channel mutes	–
Enable Meters	–	–	–	Enable data collection of meters for each channel	–
Audio Output Levels	–	–	–	Adjust individual audio channel levels	–
Amplifier Model Support	–	–	–	CX, PowerLight™ 3 Series, DCA, and legacy V1 models	–

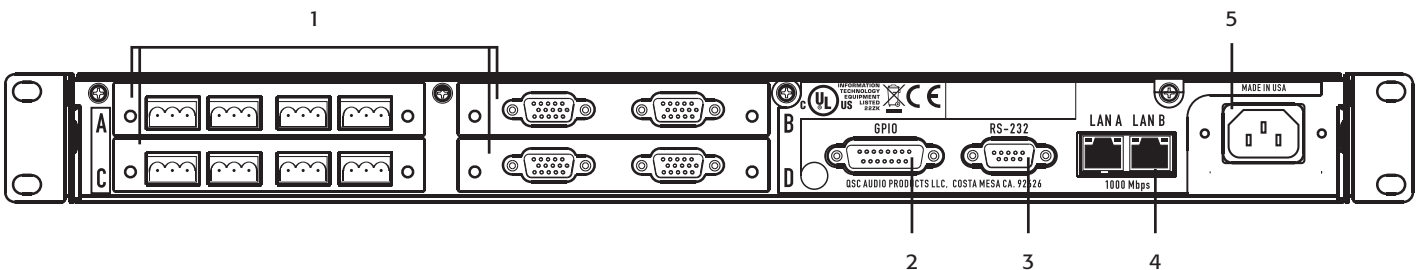
*Group Delay assumes that the sample rate converter is enabled.

Core 1000 | Core 3000 | Core 4000



1. Audio I/O Bay – accepts optional Q-Sys audio I/O card
2. RS-232 – DE-9 male connector for serial communications
3. Video Out – HD-15 female connector accepts diagnostic VGA monitor
4. Auxiliary Ports
 - AUX A Set – USB host connector x2, RJ45 10/100/1000 Mbps Ethernet
 - AUX B Set – USB host connector x2, RJ45 10/100/1000 Mbps Ethernet
5. GPIO A and GPIO B – female DA-15 connectors for Q-Sys control I/O
6. Q-Sys Network Port
 - LAN A – 1000 Mbps only, primary connection to Q-Sys gigabit network
 - LAN B – 1000 Mbps only, backup connection to Q-Sys gigabit network
7. Reserved for Future Use
8. AC Main Inlet – IEC male connector

I/O Frame



1. Configurable Audio I/O Bays
2. GPIO Interface (control I/O)
3. RS-232 Serial Control Interface
4. Dual Gigabit Network Interfaces for Q-Sys LANs
5. AC Main Inlet – IEC male connector



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