



32KD CONNECTED DIGITAL NETWORK

32KD™
digital router / mixer



CONNECTED
DIGITAL
NETWORK™



Engineered by the name synonymous with the best in audio routing and network design for more than 15 years, the 32KD provides switching, distribution, mixing, level control, signal processing, intercom, IFB, and mix-minus... all in one modular, distributed scalable routing system. The 32KD is expandable to up to thousands of inputs and outputs, at one location or spread throughout a facility connected via fiber.

The SAS 32KD Router/Mixer is the proven performer in hundreds of broadcast, network, film production, and venue installations around the world, and is the hub of the integrated SAS Connected Digital Network™.

32KD™
digital router/mixer

Mainframe

The 32KD is designed for ease of service and maximum reliability. All modules and power supplies plug in from the front; no need to climb into the back of the rack fishing between bundles of cables.

Modules and power supplies are hot swappable, so you don't have to take the system offline for servicing or expansion.

Connections are made to passive plug-in rear connector modules, which allow various connector configurations to suit your installation's requirements.

The 21 module slots are truly universal—any module can plug into any slot. This flexibility allows for any ratio of inputs to outputs (in groups of 32), and any combination of support modules.

The 32KD's backplane supports 1,024 local and remote channels.



MCU-32e Frame Controller Module

The MCU-32e generates main and standby clock, and stores all of the switcher's operating parameters and custom configurations in ultra-reliable non-volatile RAM. No PC required!

It is also the primary control interface to the Connected Digital Network: RS232 ports connect the computer running SAS Server Module and Router Control Software, which is used for system configuration, monitoring, automation, and backup/restore. Two RS485 serial ports are provided as well.

RCU-32 Redundant Clock Module

Backup to the MCU-32e for system clock and control.

KDI-16 Digital Input Module

16 AES/EBU digital input channels via precision sample rate converters that re-clock the data into an internally timed bit stream. On-board input level control lets you calibrate each input to your standard reference level.

KAI-16 Analog Input Module

32 input channels (16 stereo, 32 mono, or any combination) convert to digital via linear 24bit A/D converters. On-board input level control to calibrate each input to your standard reference level. Any of the KAI-16's inputs can be used for mono or stereo, intercom or IFB.

KDO-16 Digital Output Module

16 AES/EBU digital output channels. DSP on the output module is used for mixing and output level calibration.

KAO-16 Analog Output Module

32 output channels (16 stereo, 32 mono, or any combination) via 24bit linear D/A converters with 110dB dynamic range and extremely low noise and distortion. DSP on the output module is used for mixing and output level calibration.

Digital TDM routing system

Proven modular design

512 channels in
6 rack units

Expandable to up to
thousands of channels

Fault-tolerant multiple
DSP, TDM bus, and control
processor architecture

Rubicon™ console control
surfaces provide complete
control room and studio
mixing via 32KD's
signal processing

Digital and analog
24bit I/O

Simultaneous multiple
channel switching

Fiber-optic interconnect

Input/output modules
plug in from front

Passive connector modules
plug in from rear

All modules are
hot-swappable

Rack-mount, drop-in
console and
desktop controllers

Configuration and control
via SAS system software





DRC-16 Remote Control Module

DRC-16 provides extensive remote control capability throughout the system.

16 addressable RS485 serial ports are used for control of the 32KD/Connected Digital Network by the Rubicon console control surface, Rubicon control turret panels, SAS router control panels, intercom stations, and GPIO opto/relay interfaces. Each port can handle up to four controllers of the same type.

Five RS232 ports are used to connect to a PC for system configuration and automation, and for two-way interface to digital delivery and external router/console control systems.

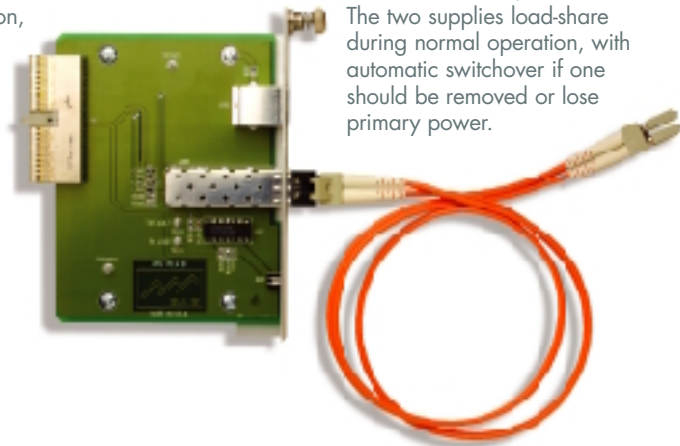
ANI-512 Audio Network Interface Module

Interconnects multiple frames via fiber-optic cable on a dual counter-rotating ring. A ring network provides more reliability; 32KD's dual ring provides an extra degree of redundancy.

512 channel interconnectivity frame-to-frame. Use one ANI-512 per 32KD frame.

KRL-16 RIOLink Input/Output Module

The connection point in the 32KD for the RIOLink. The KRL-16 links 32 channels of audio in each direction, plus RS485, RS232, and GPIO. DSP on the KRL-16 provides mixing for buses assigned to the RIOLink when the RIOLink is used in a 32KD system. Any number of RIOLink I/O modules may be fitted in a 32KD.



SPS-6 Power Supplies

32KD switching supplies have fans to keep air flowing through the supply and the mainframe. Each supply has its own AC/mains power cable, and each output is monitored and annunciated with status/alarm LEDs. The two supplies load-share during normal operation, with automatic switchover if one should be removed or lose primary power.



RIOLink™

RIOLink provides reliable, fast and efficient signal distribution throughout a facility. RIOLink performs like an "extension cord" to the 32KD, linking 32 channels of audio in and out, 16 serial RS485 control ports, 16 GPI optos and 16 GPO solid-state relays. RIO's audio inputs and outputs can be all digital, all analog, or half of each.

RIOLink can be used to connect Rubicon and local control room and studio equipment to the 32KD. Should the 32KD somehow become disconnected, RIOLink keeps going, providing full Rubicon control of routing and mixing of all local sources.

RIOLink can also be used for stand-alone applications requiring a smaller 32x32 router/mixer. Or use two RIOs for a digital point-to-point link.

Whether connecting a control room to the 32KD in the terminal room, or the 32KD to a STL penthouse, floor-to-floor or building-to-building, RIOLink will save you time and money by replacing big bundles of potentially troublesome wires with just a single cable.

Multiple applications:

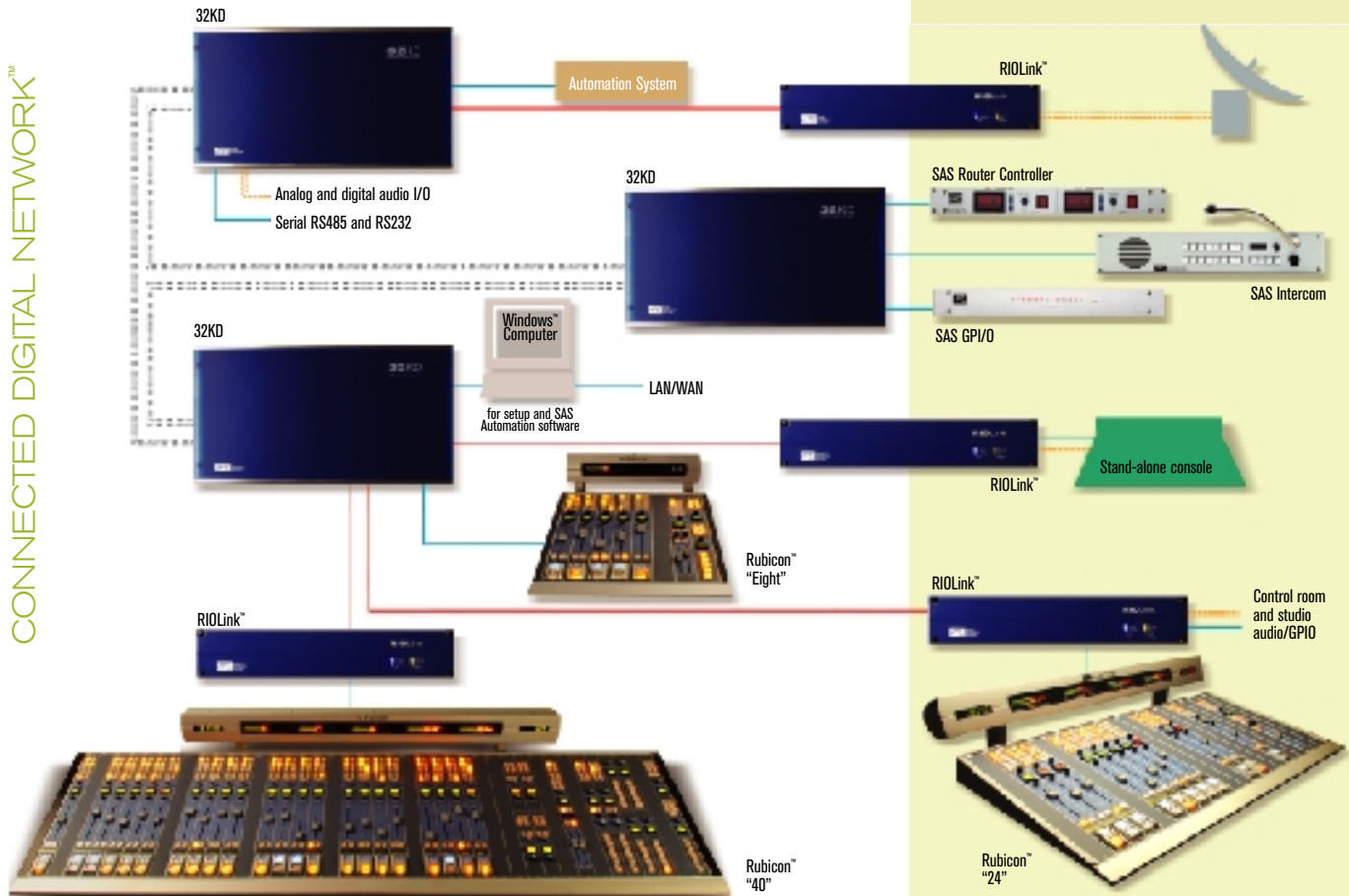
- Remote Input/Output inter-connection to 32KD
- Extend your connections with RIOLink-to-RIOLink
- Stand-alone for small router/mixer applications

Connects with CAT5 or fiber

32 audio in and out, analog, digital or half of each

16 GPI optos and GPO solid-state relays

16 SAS control ports for local connection of Rubicon and controllers



CONTROL

MULTI-CHANNEL FIBER LINK

AUDIO

RIO CONNECT

NETWORK FIBER

Connectivity, via the fewest number of cables possible, is the road of future-thinking facility design. SAS is behind the wheel and ahead of the curve with its proprietary concept of the Connected Digital Network™—the complete system of audio routing, mixing, distribution, intercom, IFB, and automation.

At the hub of this network is the SAS 32KD Digital Router/Mixer. Connected at the spokes are SAS RIOLinks, Rubicon console control surfaces, router control panels, intercom stations, digital storage and delivery systems, production editors, computer controllers, and much more.

The SAS Connected Digital Network has the features and performance needed today and the flexibility to adapt as your operation evolves. The SAS Connected Digital Network is the digital future, here today.

connected
sas digital
network

DISTRIBUTED RELIABILITY and REDUNDANCY

Integral to the fabric of the Connected Digital Network architecture is the design concept of "distributed liability"—providing multiple layers of redundancy.

Any component failure takes out only the small section that it serves. Audio in the 32KD is split into multiple TDM buses, each handling only 32 channels of audio; a disturbance on one bus only affects that small group of channels. Two separate control communication buses between modules and two separate clock buses multiply the level of distributed reliability.

The 32KD does not use a "DSP farm;" instead the DSPs on each output card handle routing and mixing for those outputs only. Redundant power supplies are available throughout.

The ultimate failure: loss of the terminal room. No problem. The RIOLink keeps on going, providing full Rubicon console control of routing and mixing of all local sources connected to that RIO.

And, of course, SAS router control software provides backup and easy restoration of your entire system's settings.



RUBICON™

Until Rubicon, broadcast consoles came in only two flavors: simple but limited, or so powerful and complex even seasoned DJs or operators could be overwhelmed.

Designed for major and medium market broadcast, Rubicon answers the call with a clean and open layout that keeps your most frequently needed controls both easy to understand and fingertip close. For the power user, Rubicon's convenient Dynamic Control Matrix™ provides access to more advanced functions.

Rubicon interfaces to the Connected Digital Network via CAT5 cables to the RIOLink or directly to the 32KD. It can accommodate any number of input, monitor, control, and intercom modules.

For more details, see our Rubicon companion brochure.

GPI-1600 Opto/Relay Control Panel

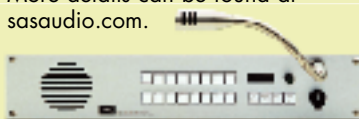
One RU chassis with 16 optically-isolated DC inputs and 16 relay-isolated DC outputs that are used for a variety of control functions: machine control, mic on/off/cough and status lamps, on-air light switching, remote on/off, talkback command, and much more.

The GPI-1600 interfaces via RS485 to the 32KD's DRC-16 Remote Control Module or to one of RIOLink's RS485 ports.



Intercom and IFB

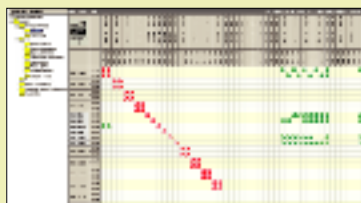
The Connected Digital Network integrates complete intercom and IFB (interrupted fold back). SAS provides a variety of dedicated intercom stations with built-in microphones and speakers and instant "talk to" or "listen to" buttons. More details can be found at sasaudio.com.



Configuration

The Connected Digital Network offers extensive user setup and control capabilities via the easy-to-use GUI-based SAS Router Control Software and SAS Server Module. These install on a Windows-based computer that connects to the 32KD via RS232. The SAS Server Module is multi-user, and can be accessed remotely via LAN or WAN.

Name your sources, destinations, relays, and optos. Set trim levels on inputs and outputs. Monitor the entire system status on the Crosspoint maps, even take and remove Crosspoints. Save and restore the entire system configuration or any part to insure your peace of mind.



Control

Hardware control panels with a wide variety of feature sets and configurations are available for rack, desktop, or console mounting. Control panels interface with the Connected Digital Network via RS485.

Virtual control panels to install on your PC, offer many of the same functions, interconnecting to the Connected Digital Network via the computer-based SAS Server Module.

More details can be found at sasaudio.com.



Automation

Automation is an SAS software module that permits real-time event switching, level change, changing of labels, and sending strings to an IP or serial port, on a time of day and day of week schedule.

Automation also allows setup of salvos and events triggered by an external stimulus or internal router event.

SPECIFICATIONS

GENERAL

Physical Size	10.5"H x 19"W x 20"D (26.7cm x 48.3cm x 50.8cm)
Power	90-260 VAC, 50/60 Hz, 350 VA max Redundant Power Supplies Separate IEC cord AC input to each

ANALOG AUDIO

Input Impedance	>20k balanced
Output Impedance60, balanced & floating
Maximum Level	+24dBu
Nominal Level	-20dBFS (dB relative to Full Scale Digital); +4dBu factory default, software selectable to 0, +4, or +8dBu
Sensitivity Adjust	+24dBu to -24dBu, each input
CMRR	>70dB, 20-20kHz, -90dB typical, 50/60 Hz
Frequency Response	+0/-0.5dB, 20-20kHz
Dynamic Range	A>A 104dBFS; A>D 108dBFS; D>A 106dBFS
THD+N	<0.005%, 20-20kHz
Crosstalk/separation	>80dB, 20-20kHz
Latency	<2ms, input to output
Connector	Euro 96 pin

DIGITAL AUDIO

Input Impedance	110, transformer balanced
Output Impedance	110, transformer balanced
Signal Protocol	AES-3
System Sample Rate32, 44.1 or 48kHz, software selectable, internal crystal; ref ±25ppm, AES-11 input for external reference
SRC24bit input sample rate conversion, software selectable, channel status and user bits preserved
Input Level Adjust	+24dB to -24dB, each input
Latency	<2ms, input to output
Connector	Euro 96 pin or RJ-21 50 pin or 2x25 pin D-sub

HARDWARE CONTROL

Router Control Panels	RS485, SAS Control Protocol, 76.8kbaud
Opto In	5-12VDC, 5mA max
Relay Out	Form C copper contact relay
Remote Access	WAN and DTMF available
Connector	Euro 96 pin or RJ21 50 pin

SOFTWARE CONTROL

SAS Router Control Software	PC Windows™; multi user
SAS Server Module	PC Windows; multi user
SAS SoftPanels	PC Windows; TCP/IP to SAS Server Module
SAS Automation Software	PC Windows; TCP/IP to SAS Server Module
External Automation	RS232C, USI (User Serial Interface), 19.2 kbaud, or TCP/IP to SAS Server Module

NETWORK

Connectivity	Fiber, LC duplex, multi-mode (to 550m) or single mode (to 20km)
Topology	Dual counter rotating ring, fault tolerant, 512 channel minimum capacity (each frame has backplane capacity for up to 512 local sources, 512 network sources)

RIOLINK

Connectivity	CAT5 to 200m, RJ45 connector; Fiber, LC duplex, multi-mode to 550m, or single mode to 20km
Audio I/O Plug-In Cards	Analog or Digital, 16 signals (8 stereo) each; total 32 audio in, 32 audio out
Remote control	16 RS485 control ports
GPIO	16 opto in, 16 GPI solid state 25Ω
Serial	DC resistance relay out 5 RS232C

0dBu = 0.775 V RMS. Measurements taken with 20-20kHz filter.
Specifications subject to change without notice.



**SIERRA
AUTOMATED
SYSTEMS**

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