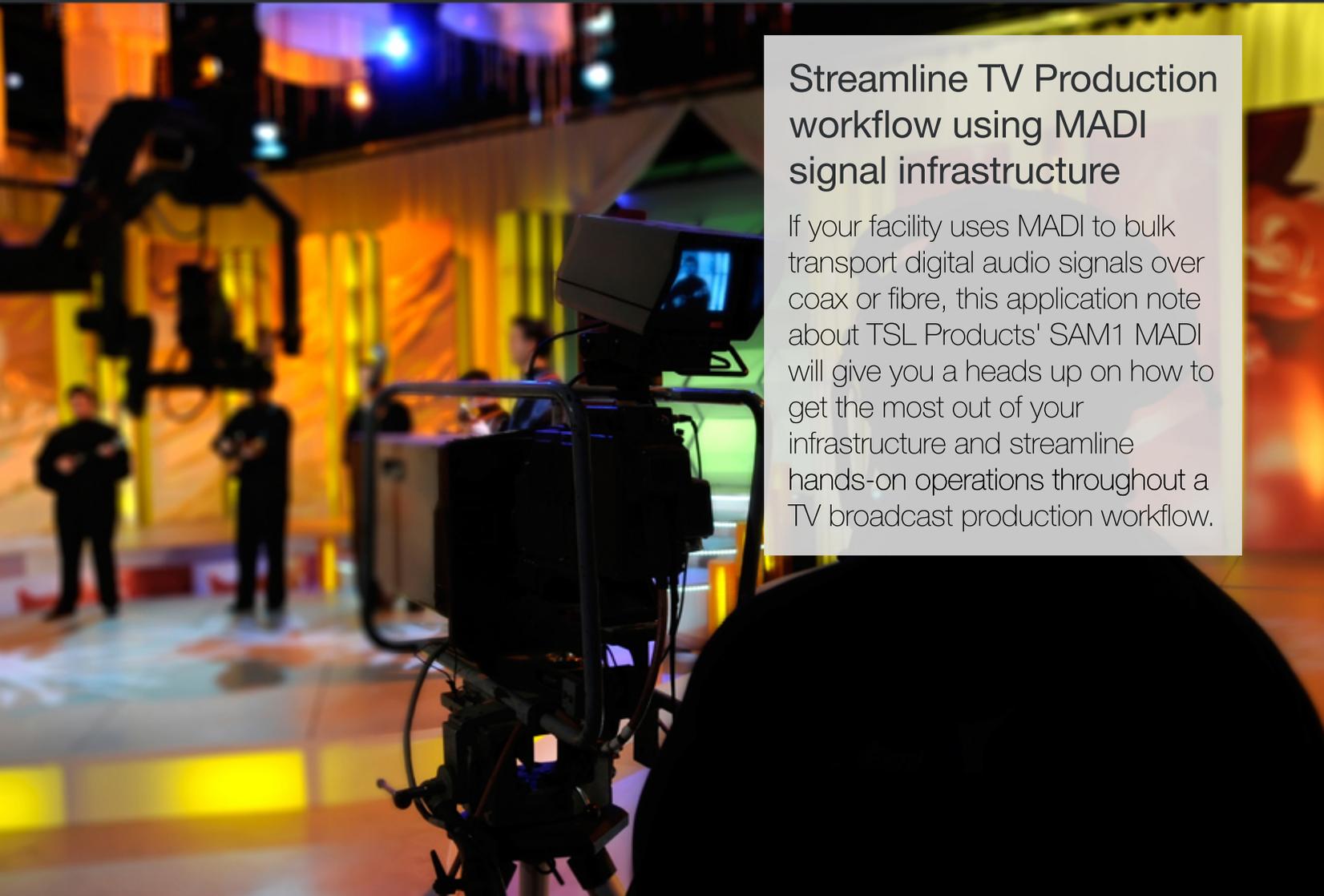


MADI Monitoring within a TV Production Environment



Streamline TV Production workflow using MADI signal infrastructure

If your facility uses MADI to bulk transport digital audio signals over coax or fibre, this application note about TSL Products' SAM1 MADI will give you a heads up on how to get the most out of your infrastructure and streamline hands-on operations throughout a TV broadcast production workflow.

Studio Audio Monitoring Series (SAM1 MADI)



Originating as a standard in 1991, MADI was first developed by recording industry technology companies Solid State Logic (SSL), AMS-Neve, Sony (DASH) and Mitsubishi (ProDigi) as a means to transport bi-directional audio between large-format audio consoles and digital multi-track tape recorders using 75-ohm Coaxial cables.

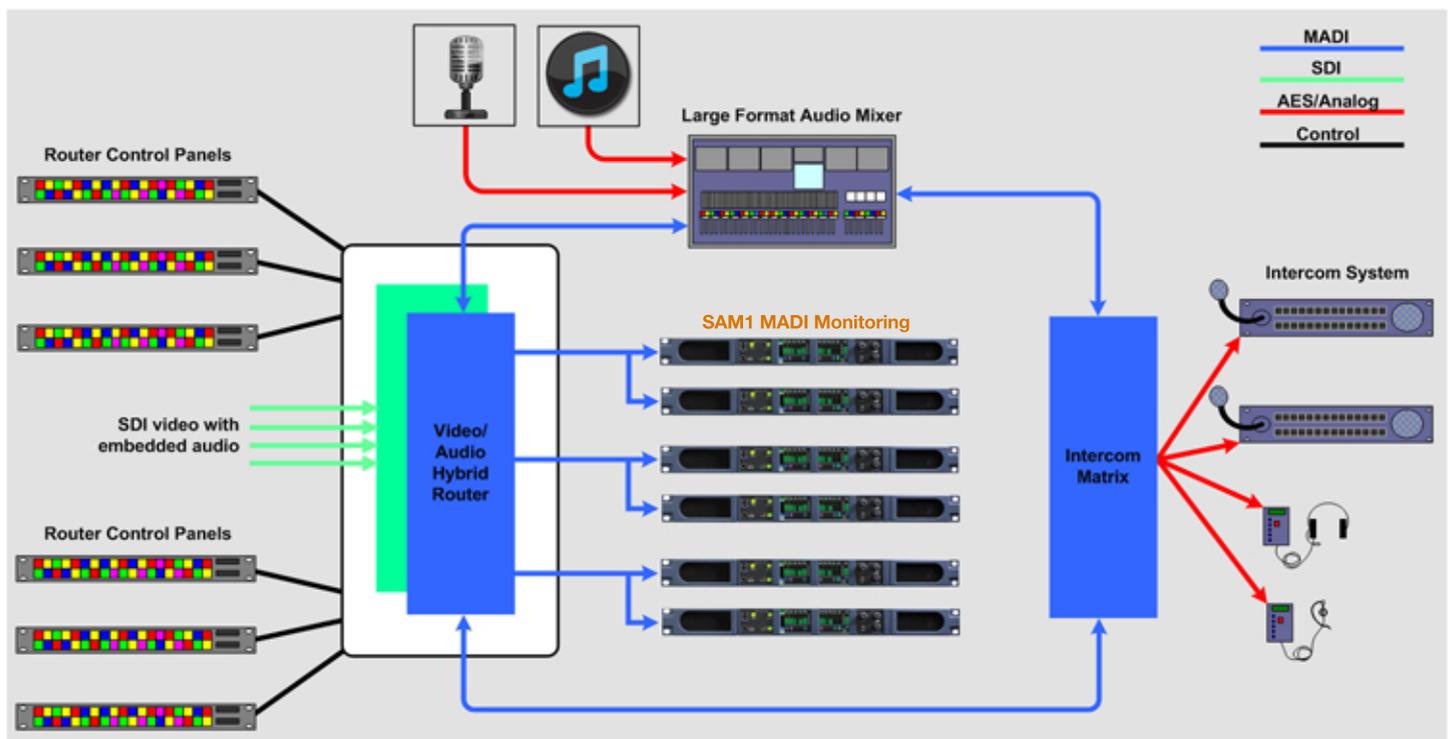
While the original idea for MADI catered to a very narrow recording studio application, the standard has survived to address the expansion of digital production and HD workflow for broadcasters. As the broadcast world waits for technologies such as IEEE 802.1 Audio Video Bridging (AVB), AES 67 (encompassing DANTE, Ravenna) or SMPTE 2022 to provide a unified standard for audio distribution over Ethernet, MADI is the only viable go-to multichannel audio technology that enjoys a long time standard status and support from a multitude of equipment manufacturers globally.

Listen and gain unrestricted access to all audio signals from anywhere within a system

The following schematic illustrates how a typical Television Broadcast Audio System utilises MADI as a means to transport multichannel audio between subsystems such as Intercom, Audio Mixing Console and hybrid Audio/Video routers which combine embedding/de-embedding with video and audio crosspoint switching.

The SAM1 MADI is the ideal solution for monitoring throughout a MADI based infrastructure because it provides the user with the ability to listen to audio signals from anywhere within a system. Signals from the intercom matrix, audio mixer, SDI embedded and program contribution feeds can all be switched via the Hybrid Router into the MADI monitors giving unrestricted simultaneous access to whatever audio the production demands.

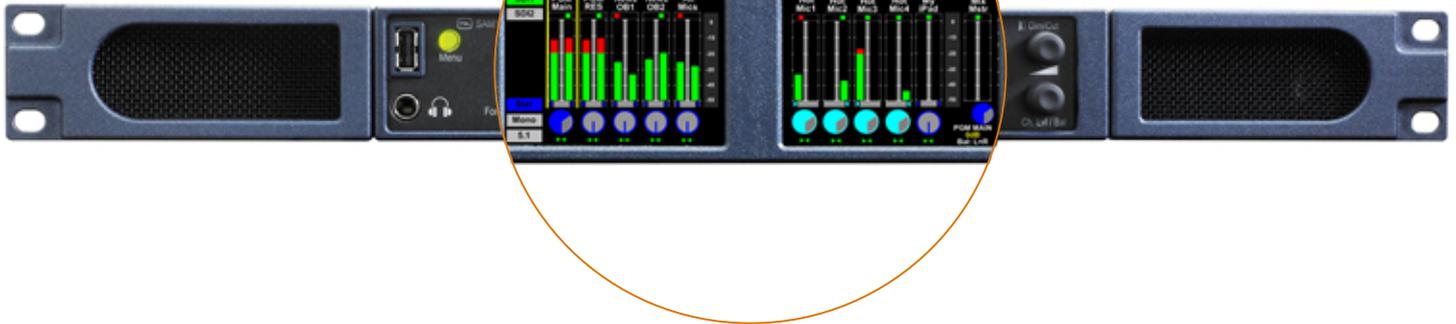
Furthermore, SAM1 MADI also features SDI, AES and analog inputs giving connectivity options to 3rd party system components that do not have MADI such as local PC soundcards, peripheral audio devices and subsystems.



SAM1 MADI in use

Due to its highly configurable nature the SAM1 MADI combines the sophistication of a versatile monitoring tool with a simplicity of operation that means it can be used confidently by the entire broadcast production team.

SAM1 MADI setup for personnel across a busy News Show Production Gallery



The ten independent monitoring channels are configured with incoming feeds that would usually require Intercom system real estate, bespoke conversion/mixing equipment and additional desktop speakers. In this example the operators have access to main and reserve program audio (SDI embedded), incoming audio from the two news stringer trucks (MADI or AES), mixed and 'Hot' prefade presenter microphones (MADI) and even an input for an iPad (analog) to listen to a competitors output and international news agencies.

The unique rack-mixer functions of the SAM1 platform enable the operator to trim individual levels, define whether incoming channels are mono, stereo or 5.1 downmixed to stereo and also to adjust the pan or balance giving complete control over their own monitoring environment. Once configured, the SAM1 can be locked to prevent accidental changes whilst setups can be backed up to USB memory or copied from panel to panel.

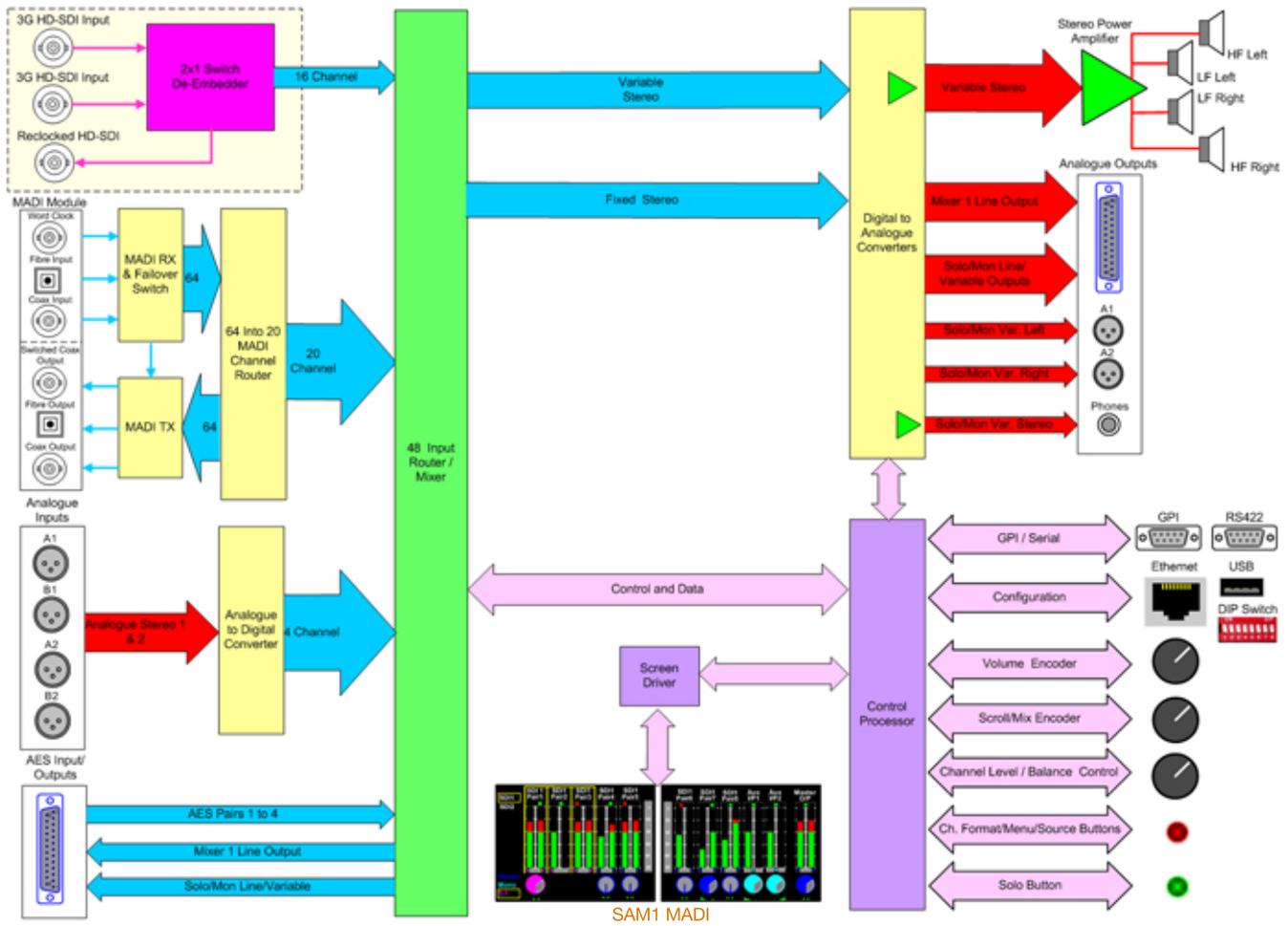
Input routing can be changed instantly direct from the front panel using the 'Source' selector, which can access either a user programmable shortlist of essential inputs called the 'Hot Source List' or the entire selection of SDI, MADI, AES and analog signals.

Fast and simple installation

SAM1 MADI has been designed to make installation fast and simple. Both fibre and Coaxial MADI inputs and outputs are provided with conversion from the active input format to the opposite output a standard function so that a SAM1 MADI can be connected to an incoming fibre circuit and the Coaxial output looped across to adjacent monitors. A switched Coaxial output is designed with a passive failover relay so that multiple SAM1 installed within a 'daisy chain' (unit A output to unit B input, B output to C input etc) formation will maintain connection if power should fail on one or more units forming part of the chain.

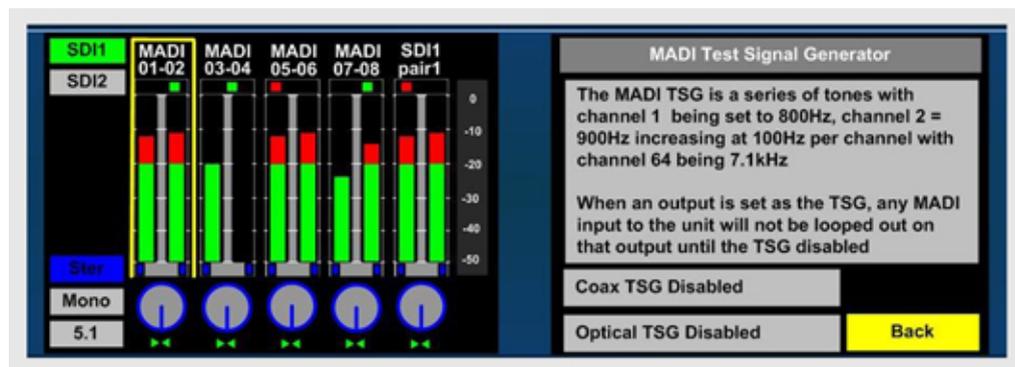
AES and analog I/O use industry standard D-Sub and XLR connectors and pinouts. A unique D25 to BNC (4 in/4 out) AES cable is available from TSL Products, for use with SAM and PAM products, for installers using 75 Ohm unbalanced AES over coax.





Check the integrity of MADI connections

A useful tool for integrators and engineers has been included in the SAM1 MADI. An internal test signal generator outputs a stepped tone from the Coax and Optical output connectors providing an extremely useful means to check the integrity of MADI connections in both fixed and temporary installations alike.



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