



861

Reference Digital Surround Processor
Version 4 with Room Correction

AV processor and system controller

Now includes Meridian Room Correction for a dramatic improvement in listening room sound

CD and Dolby Digital signals upsampled to 24-bit, 96kHz and de-jittered

Full compatibility with high-sample-rate signals throughout

Modular internal construction and card-based structure allows easy addition of new hardware, interfaces and features

Full RS232 control, status and trigger outputs

Software updateable

Rack-mountable option available

Rated Class 'AAA' by *Stereophile Guide to Home Theater*

BOOTHROYD STUART
MERIDIAN[®]

www.meridian-audio.com



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"Brilliant in conception, mind-boggling in execution, more powerful and better-sounding than almost anything else ever made."

—What Hi-Fi

"...the 861 is beyond reproach....There is no need for discussion, it is simply the best."

—Home Entertainment

"A life-changing experience..."

—The Absolute Sound

"...the best AV technology that money can buy... a benchmark to which all others can be judged."

—Audio & Video Lifestyle

"...the most flexible and capable device in audio. ...it offers as much insurance against the winds of technological change as is possible. It's a formidable machine."

—Stereophile

Meridian has established an unequalled reputation for outstanding use of digital audio and DSP (Digital Signal Processing) technology in our products.

The 861, rated Class 'AAA' by *Stereophile Guide to Home Theater*, inherits Meridian's original Surround DSP pedigree and adds to it significant additional DSP power, a higher degree of control sophistication and outstanding audio and conversion stages.

The 861's card-based architecture also brings the potential for handling more than 8 channels and for decoding future surround formats.

Of course, 861 makes a perfect front end for the 'Class A' rated Meridian Digital Theatre, where the 861 can receive super-high-resolution digital signals in MHR SmartLink format from a Meridian optical disc transport such as the companion 800.

Movie sound

Dolby Digital (AC-3) is the most common sound format on DVD (and LaserDisc, for which an optional demodulator card is available). The unique Meridian Dolby Digital decoder delivers the highest-quality sound of which this format is capable, and passes the most extreme tests. The 861 also decodes DTS signals from DVD – as well as DTS surround CDs and LaserDiscs. MPEG Surround is another audio format for DVD, satellite broadcasts and computer multimedia, and the MPEG decoder provided in 861 is the best sounding so far.

Music formats

Meridian's 861 uses carefully crafted processing to get the maximum benefit from high-precision PCM inputs. The 861 accepts multiple input channels of 24-bit, 96kHz sampling PCM, and gives the maximum resolution on these signals. The processor also performs high-resolution up-sampling on signals coming in at lower sampling rates, de-jittering them and significantly improving their audio quality.

What makes 861 so special?

The single most important feature in all our DSP products – including the 861 – is the incredibly high standard we set for sonic performance.

Another differentiating feature is that instead of using chips that have their firmware irrevocably 'burned into' them, Meridian's signal processing is software based, and therefore can be improved or modified in future. For example, Dolby and DTS encoding, and THX specifications have advanced a great deal since the initial standards were set; DVD-Audio also brings new requirements. Meridian's solution gives the customer exceptional value over the years to come – a Meridian 800 Series system does not go out of date.

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Most important, however, is the provision of improved sound by fitting a highly accurate, 24-bit decoding algorithm right at the heart of the world's best sounding surround decoder. Crude solutions – like outboard decoders with six analogue outputs, or multiple plug-in third-party decoder cards – can never remotely approach the sound, function or facilities of the fully-integrated Meridian 861 architecture.

System integration

With the profusion of formats that may appear at the inputs of a decoder, there is room for confusion. However, the 861 continually monitors the digital input and automatically loads the correct decoding software for the format, speaker layout and encoding of the incoming signal. This capability is enhanced by MHR SmartLink, which provides a digital link between a Meridian optical disc player and processor, carrying explicit information about the nature of the datastream as well as encrypted high-resolution digital signals from DVD-Audio – the first system of its kind to be approved.

You can also store separate user parameters for each source (such as DVD) depending on whether the incoming signal is stereo or surround.

THX? Naturally!

New THX specifications like Ultra 2 have a huge amount to offer in the multichannel surround replay environment. The 861 has all the signal processing in place to comply with the latest THX requirements. The front channels carry re-equalisation; the surrounds use a timbre-match curve and a sophisticated de-correlation technique.

Bass management and protection

Movie signals have the potential to require a 12dB increase in bass power handling in a system. Not only can the LFE (Low-Frequency Effects – the '0.1' in '5.1') channel convey 10dB more bass, but potentially this can coincide with full bass level in the other five channels. Although the Dolby Digital, DTS and MPEG encoders limit the total bass level to +15dB, the resulting bass energy can still be incredibly demanding for even the very best systems – and equally important – may be disastrous for other, less capable, speakers.

The Meridian 861 incorporates a highly sophisticated series of bass protection schemes for Digital Surround formats. The user can control the overall amount of LFE added in. In addition, the 861 has a bass limiting function (adjusted in Setup) which limits the total amount of bass passed to the system.

As well as the overall bass protection, the 861 can monitor all speaker feeds. A sophisticated DSP function determines how hard each individual speaker is working and compares that to a capacity rating measured for each speaker when the system is installed, by means of a calibration routine that actually tests the speaker's capabilities. If the signal demands more bass than a speaker can supply, a proprietary, psychoacoustically optimised limiting filter momentarily and elegantly reduces the load on that speaker. This unique protection method means you can get the most out of all the speakers in the room without any fear of damage or unpleasant overload noises.

Sample rates and de-Jittering

The 861 embodies the very latest developments in digital audio, including high sample-rate capability throughout and DVD-Audio digital interfacing at up to 192kHz. Meridian, famous for their smooth-sounding digital-audio components, have made a major breakthrough with a memory-based de-jittering system that renders the processor almost entirely immune to input-signal quality – making it by far the sweetest and most open sounding controller that Meridian has built to date. Digital inputs such as Compact Disc and Dolby Digital (if derived from an 800 or 598 with digital outputs) are upsampled to 24-bit, 96kHz sampling and de-jittered by a powerful 150MIPS DSP processor and FIFO memory buffer, while analogue signals are transferred into the digital domain via superb-quality high-sample-rate 24-bit Delta-Sigma A/D converters.

861 Overview

The architecture of the 861 allows for wide flexibility – future sources, formats and features can be handled by upgrading software and/or cards.

Inputs

The 861 is a full-system controller preamp that provides seamless control of up to 12 analogue or digital audio, and up to 12 video, sources. The Tape cards provide additional internal A/D and D/A converters to give full support for both tape recorders and an extensive 2- and 3-zone multiroom capability in analogue or digital formats.

By providing digital as well as analogue inputs, the 861 can give radically higher sound quality for sources that are originally digital – like CD, DVD and especially DVD-Audio.

As well as accepting multichannel digital audio, the 861 will handle SPDIF-encoded Dolby Digital, DTS or MPEG from sources like DVD, Satellite and LaserDisc.

Processing

The Meridian 861 is a digital processor and all signals are handled within the digital domain. The processing engine can consist of between 2 and 10 modular processor cards, each offering an astonishing 300 MIPS of processing power and housing multiple ultra-fast 48-bit processors with high-speed cache memory.

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In each DSP core, the incoming signals are processed using a variety of proprietary algorithms and up to a dozen output signals are generated. These signals can be used to feed a number of speaker layouts, ranging from 2- to 9-speaker stereo/surround with multiple subwoofers (with adjustable crossover parameters).

The on-board algorithms include Meridian's own highly transparent Dolby Pro Logic II and Dolby Digital implementations, MPEG Surround, DTS, THX extensions, TV Logic and a variety of award-winning music programs including Trifield and Ambisonics.

Room Correction

From Version 4 onwards, Meridian's 861 offers a powerful additional feature: Meridian Room Correction. The Room Correction system employs a special computer program that uses the 861 to measure a room's resonances with a simple microphone. It then computes digital filters to control the resonances, or "modes", and uploads them to the 861, where different sets of filters can be associated with different loudspeaker layouts and profiles. The result is a dramatic improvement in the sound of a listening room.

Outputs

The 861's outputs can be provided as digital signals to feed Meridian DSP Loudspeakers, or as variable analogue outputs using a proprietary on-board 24-bit resolution D/A conversion method – or as a mixture of both.

Video control and OSD

The Meridian 861 provides broadcast-grade video switching options for monitors, projectors and video tape routing. The comprehensive setup and customisation facilities allow the user to link any video and audio combination to the 12 sources (accessed from Source switching on the front panel or the remote control).

In addition to providing high-quality video switching, the 861 has the ability to give 'help' and 'system control' feedback information via an On-Screen Display.

Video formats supported via optional cards include Composite, S-Video, Component (interlaced and de-interlaced/progressive) and RGB.

Standard and optional cards

Each 861 – available as a table-top box, or in a rack-mountable version with or without cover – is factory fitted with a backplane that has slots for both digital audio and video cards, a highly sophisticated power supply and a selection of 800 Series cards, the total number of these being dependent on the combination being installed.

The following cards are fitted as standard inside a Meridian 861:

- CO00:** Control computer card. Complete with Flash memory, RS232 port for control and status, 3 x configurable trigger outputs and Meridian Comms.
- CD20 & EF20:** Internal (no rear panel) 48-bit DSP cards each containing two Motorola 56367 chips running in dual precision mode, each card offering 300 MIPS (million instructions per second) capability.
- IE42:** Digital Input/Output with 6 x S/PDIF (IEC1937) coax inputs, 1 TosLink optical digital input, multiple input options. Includes 150 MIPS DSP de-jittering facility and upsampling to 24-bit, 96kHz sampling. 2 x 2-channel S/PDIF outputs.
- IA00:** Analogue Input with 6 pairs of analogue input on RCA phono connectors, with super-quality A/D conversion.

To provide audio outputs, one digital output card or two analogue output cards must be fitted. The list of available cards (see price list for updates) includes:

- OE12** Digital Output: 4 x coaxial for Meridian DSP Speakers only
- SL00** Slave Patch: 4 x DIN 180 for Meridian DSP Speakers only
- OA03** Analogue Output: 4 x unbalanced 192kHz-capable on RCA
- OA13** Analogue Output: 4 x balanced 192kHz-capable on XLR
- IA10** Analogue Input: 2 pairs balanced on XLR (IA00 required)
- IA20** Analogue Input: 3 pairs unbalanced on RCA (IA00 required)
- IA30** Phono Input Moving Coil: 1 pair unbalanced on RCA (IA00 required)
- IA35** Phono Input Moving Magnet: 1 pair unbalanced on RCA (IA00 required)
- IA40** Multi-channel Analogue Input: 2 x 6 discrete channels on RCA
- IA45** Multi-channel Analogue Input: 6 discrete 96/24 channels on RCA
- ID20** Digital Input: 2 x coaxial, 2 x Toslink optical
- ID25** Digital Input: 4 x Toslink optical
- ID30** Digital Input: 3 x AES/EBU on XLR, 1 x AT&T
- VS00** Video Card: 4 composite, 4 S-video, tape and monitor
- VS10** Video Card: 8 S in, S and composite. out with S to C conversion
- VS20** Video Card: 1 component in and out for on-screen display
- VS40** Video Card: 8 composite in, with tape and monitor
- VS50** Video Card: 3 component in and 1 out on BNC
- TP00** Tape Output: 2 pairs unbalanced on RCA, 1 x headphone out
- RF00** LD Input: 1 x RF RCA, 1 x digital coax on RCA, 1 x Toslink optical

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