

SR-1000

Standalone Integrated Media Block™

The time-tested IMB with proven consistent performance



GDC Technology has been at the forefront of cinema technology development since the advent of digital cinema. From a commitment to introducing first-to-market solutions to providing outstanding customer services and technical support, GDC is recognized globally as a leader in integrated media block (IMB) technology. The SR-1000 is the company's sixth-generation digital cinema media server designed for near-zero maintenance and minimal total cost of ownership.

The SR-1000 supports playback of SMPTE and Interop digital cinema packages (DCP) at bit rates up to 500 Mbps¹; its DTS:X™ for IAB Immersive Audio solution supports SMPTE ST 2098-2 immersive audio bitstream (IAB) standard, which was developed to deliver a single interoperable audio format for global theatrical distribution.

With its future-proof flexible architecture, the SR-1000 offers several affordable options, including 4K, a built-in diskless 2TB CineCache™ storage, and a built-in DTS® Surround audio processor. In addition, there are more upgrade options targeting DTS:X for IAB installations: (i) a built-in 15.1 cinema audio processor to replace an external cinema processor; (ii) a built-in DTS:X for IAB decoder up to 32-channel and (iii) Audio over Ethernet (AoE) output using AES67 standard.



GDC Technology manufacturing facility is ISO 9001:2015 certified.

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SR-1000 Standalone IMB™

Key Benefits

High Reliability

With built-in embedded power electronics used in medical and military products, the overall system stability is ensured. The SR-1000 is SGS certified for 100,000 hours Mean Time Between Failures (MTBF).

**100,000
hours
MTBF**

Compatibility with Series 1, 2, 3 and 4 Projectors

The SR-1000 IMB seamlessly integrates with Series 1, 2, 3 and 4 DLP Cinema® projectors including Barco, Christie and NEC to ensure highly reliable and secure content delivery.



CineCache

The SR-1000 IMB is designed with diskless CineCache (built-in cache memory) available in 2TB offering key advantages:



1 Movie ingest in just 30 minutes without interrupting concurrent playback

CineCache enables incredibly fast content ingest during playback. Content ingest and playback can be performed concurrently without local HDD storage. One average+ movie can be ingested within 30 minutes without interrupting playback. It is no longer necessary to wait for the movie to end to ingest content.

2 Incredibly fast content transfer across IMBs

For IMBs with CineCache, content can be copied at lightning speed across IMBs via 1Gbps LAN without any IMB playback interruption. An average+ movie only takes approximately 30 minutes to be transferred between IMBs.

3 High-speed and high-reliability playback of HFR and HBR contents

CineCache is a superior technology providing high-reliability playback of content with high frame rates and data rates that are much higher than standard DCPs.

*The running time of an average movie is between 90 and 120 minutes.

Supports the Playback of Thousands of Movies

Take full advantage of show scheduling with Ultra Storage technology which is capable of storing over 2,000 movies when combined with Cinema Automation CA2.0. The content is available for playback on any screen, at any time. You no longer need to ingest content to each screen for playback, saving hours of time for content management operation.

**ULTRA
storage**

Built-in Wi-Fi with Intuitive Web-based User Interface

Both audio and video features can be configured and controlled remotely through the easy-to-use web-based UI. The web-based UI connected to the SR-1000 built-in Wi-Fi is user-friendly and intuitive. With drag-and-drop, filtering and navigating functions, operators can easily switch between tabs or pages. Other than accessing the UI through a computer or a laptop, wireless access is also enabled by using handheld devices such as a smartphone or a tablet.



Built-in DTS Professional Cinema Audio Options

The SR-1000 offers three built-in cinema audio processing options: 1) DTS Surround, 2) 15.1 cinema audio processor with DTS:X for IAB rendering, or 3) a built-in DTS:X for IAB rendering up to 32 channels. As an option, the DTS Surround Cinema certification program allows a path to future-proof your auditorium to DTS:X for IAB immersive audio. The DTS:X for IAB immersive audio solutions support DTS:X playback and SMPTE ST 2098-2 immersive audio bitstream (IAB) standard, representing a major milestone to deliver a single interoperable audio format. IAB allows motion picture studios to efficiently distribute immersive audio content to the DTS:X screens worldwide—exactly as the filmmakers intended.



SR-1000 Standalone IMB™

Technical Specifications

System Interfaces	2 x Gigabit Ethernet - (1GbE/RJ-45)
	1 x eSATA 6 Gbps
	2 x USB 3.0 (A-Type Female)
	1 x BNC (video sync input)
	1 x HDMI® 2.0 (alternative content input)
	2 x 3G-SDI (alternative content input) ¹
	8 x GPI (2 x RJ-45)
	8 x GPO (2 x RJ-45)
Audio Output	AES3 - 24-bit, up to 24-channel, 48 KHz (2/3 ¹ x RJ-45)
	AES67 ¹ - 24-bit, up to 32-channel [^] , 48 KHz
Audio Processing	Up to 32-channel DTS:X for IAB decoder
	Up to 15-channel 1/3 octave Graphic EQ and independent bass/treble control (non-LFE channels)
	Parameter EQ for LFE channel (Subwoofer)
	Global delay for all channels and independent audio delay (500ms) for individual channel
DCP Playback	DCI-compliant
	JPEG 2000 ² - Standard
	2K - 24, 25, 30, 48, 50, 60 (2D)
	2K - 24, 25, 30 (3D)
	Option with upgrade ³
	HFR option: 2K - 120 (2D); 48, 50, 60 (3D) 4K option: 4K - 24, 25, 30 (2D)
Video Processing Features	MPEG-2 SD/HD
	SMPTE and Interop Digital Cinema Packages (DCP) at bit rates up to 500 Mbps ¹ ; IAB; DTS:X
	Color-space conversion – supports YCbCr709, Rec.709, XYZ ¹ ; YxCz
	Deinterlacing
Control	Scaler to support 2K & 4K projectors
	Web-based graphical user interface
Security	Cinema Automation - CA2.0
	Automatic playlist programming - CA2.0
	API for control from third-party TMS and NOC systems
Third-party Integration Options	NexGuard® forensic watermarking
	FIPS 140-2 (Level 3 security certified)
Subtitles	Third-party TMS
	Third-party 4D systems
Power Consumption	Subtitle overlay
	Projector Cinecanvas™ support
Storage Options	Less than 75 W
	CineCache 2TB
	Redundant local hot-swappable storage (up to 32TB) with CineCache 2TB Ultra Storage - CA2.0 Centralized Storage Server with on-board CineCache 2TB per screen
Closed Captioning Device	Support SMPTE430-10
Physical & Environmental	Dimensions (WxHxD) – 320 x 63.7 x 240 mm
	Weight – 1.4 kg
	Operating temperature – 0°C to 40° (32°F to 104°F)
	Operating humidity – 20% to 90%, non-condensing
	Maximum operating altitude – 10,000 ft. (3,000m) above sea level ⁴

¹ Depending on the SR-1000 option chosen

² Check with GDC on specific frame rate & resolution support

³ Paid license required

⁴ Depending on the specifications of the hard disk

[^] AES67 available as an option in Q4 2023

Built-in DTS Surround/ 15.1 Cinema Audio Processor

Key Features

Field upgradable Built-in Cinema Audio Processor Options

The cinema audio processor license can be procured remotely from GDC Technology, unlocking the optional built-in cinema audio processor's features.

DTS Surround Audio Processor

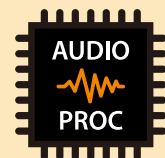
With the built-in cinema audio processor options, the SR-1000 offers the capability to provide superior 5.1/7.1 surround sound reproduction for uncompromising quality of DTS Surround. The embedded robust audio processing engine can achieve precise sound system calibration of the theatre by supporting

- State-of-the-art DTS Surround tuning practices
- 1/3-octave graphic EQ with independent bass and treble controls (non-LFE channels)
- Parametric EQ (choice of dedicated general LFE settings or SMPTE standard LFE settings for LFE channel)
- 3-way crossover with selectable filter type and configurable slope
- Fader (gain adjustment), global and individual channel delay
- Provides booth monitor output
- Built-in signal generator, mute with configurable fade-in/fade-out times, wide dynamic range
- Audio input level display, easy configuration backup and restore
- Channel routing & duplication



15.1 Cinema Audio Processor

A built-in 15.1 cinema audio processor is available for a DTS:X for IAB installation.



DTS Surround and DTS Surround Cinema

Key Benefits

Cinemas can either use SR-1000 built-in DTS Surround audio processor in their existing theatres; or build a certified "DTS Surround Cinema" with a speaker layout following DTS cinema installation guidelines featuring full-range surrounds and DTS target curve. A certified DTS Surround Cinema requires onsite certification by an authorized DTS technician.

Using Existing DCP Formats

Theatres using the built-in DTS Surround audio processor and certified DTS Surround Cinemas can playback the existing DCPs with 5.1/7.1 surround audio.

Every Movie will Sound its Best

- Optimized X-curve targets and state-of-the-art tuning practices deliver stunning sound quality with the DTS Surround solution.
- Featuring extended frequency range to significantly improve the overall quality of presentation in surround sound theatre.

A Stepping-stone to DTS:X for IAB

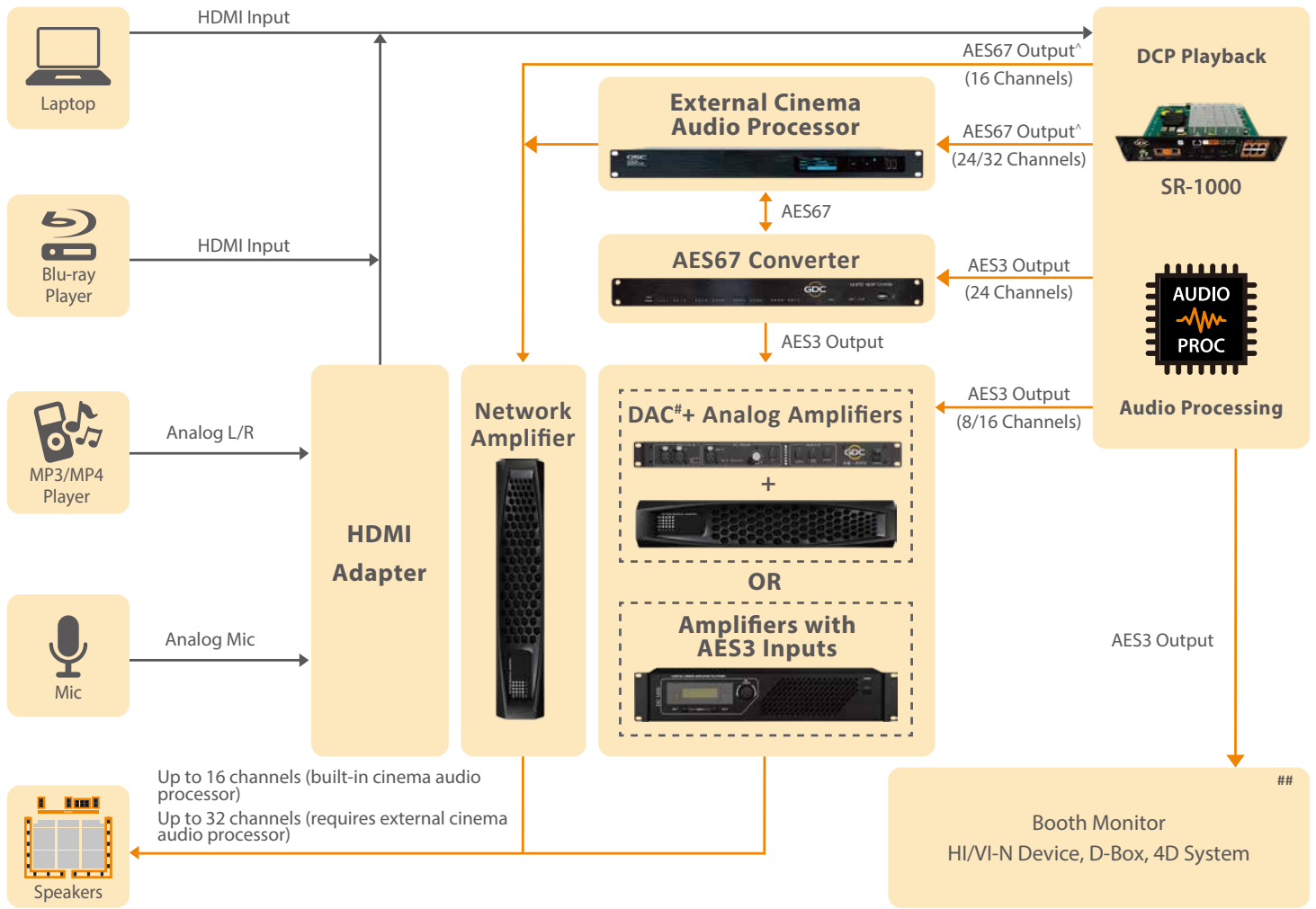
Certified DTS Surround Cinemas feature all the core components of DTS:X installations and are easily upgradable to DTS:X for IAB.

Strong Identity to Moviegoers

Marketing materials including a theatre plaque are provided to promote DTS Surround Cinema.

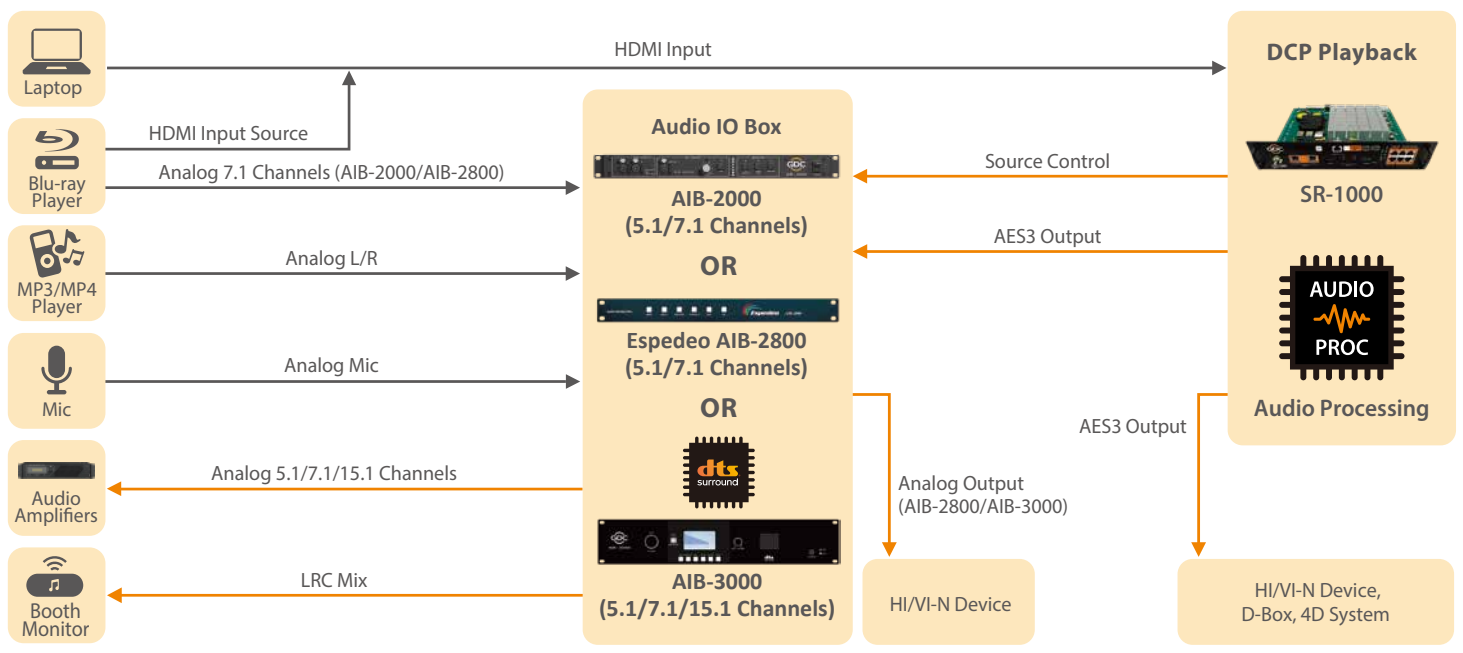


Solution for SR-1000 IMB with Digital or Analog Amplifiers*



*Digital AES3 to Analog converter, up to 32 channels
 **Depends on the specific system configuration

SR-1000 IMB and Optional Audio IO Box to Interface with External Audio Equipment*



Built-in Cinema Audio Processor

Technical Specifications

Audio Source

DCP source	5.1/7.1 surround sound channels and up to 32-channel DTS:X immersive audio supporting IAB
HDMI input	8-channel PCM
Microphone input (via AIB-2000/2800/3000 or HDMI adapter)	Microphone level input with switchable +48V phantom power, adjustable gain and selectable HPF (+48V phantom power and selectable HPF available only on AIB-2000)
Non-sync input (via AIB-2000/2800/3000 or HDMI adapter)	Stereo line level inputs
Analog balanced 7.1 input (via AIB-2000/2800)	8-channel analog line level inputs
SPDIF input (via AIB-2800)	1x optical fiber, 1x coaxial input

Audio Output

Digital audio output	Up to 24-channel AES3, up to 32-channel AES67 [^] , LCR Monitor, HI/VI-N, LTC (sync for 4D systems) and DBOX motion signal
Analog audio output (via Audio IO Box or DAC)	8/12/16/24/32-channel balanced analog line level outputs

Audio Processing

DSP Processing (5.1/7.1/15.1)	32-bit full floating point DSP processing
Graphic EQ for 7/15 channels (non-LFE channels)	1/3 octave graphic EQ (27 bands) Band gain: -6 dB to 6 dB in 0.1 dB step
Bass/Treble for 7/15 channels (non-LFE channels)	Bass level: -6 dB to 6 dB in 0.1 dB step Treble level: -12dB to 12 dB in 0.1 dB step Treble corner frequency: 1K/2K/3K/4K Hz
LFE parametric EQ	Center frequency: 20Hz to 120 Hz in 10 Hz step Bandwidth (Q): 0.5 to 10 in 0.1 step Gain: -12~6dB in 0.1 dB step
LFE low pass filter	Default / SMPTE
Crossover (for 5.1/7.1 only)	Mode: 3-way Filter type: Butterworth, Linkwitz-Riley Filter slope: -6, -12, -18, -24, -36, -48 dB/octave
Limiter	Speaker type: passive/ active/ external processor
Global delay for all channels	-400~400ms
Audio delay for individual channel	0~500ms
Volume control (main fader) for all channels	-90dB~10dB (fader 0~10)
Mute (fade in/out) duration configuration	0.2 to 5.0 second in 0.1 step
Channel gain for individual channel	-22dB~8dB in 0.1dB step
PCM channel assignment	Yes
Signal generator	100Hz, 1KHz, 10KHz, PinkNoise, sweep
Audio input level meter	16 channels
Backup and restore	Audio configuration presets (equalization (EQ), crossover, channel delay, global delay and gain)
Control	Web-based graphical user interface Cinema Automation CA2.0 Automatic playlist programming CA2.0 API for control from third-party TMS and NOC systems

Performance

Dynamic range (via Audio IO Box)	>105dB
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*The actual system configuration may vary depending on specific application requirements. The specifications of the Audio IO boxes may vary. Please contact GDC for further details.

Featuring DTS:X for IAB Immersive Audio Solution

Built-in up to 32-channel DTS:X for IAB Decoder

GDC Technology, a world-leading digital cinema solutions provider, and DTS, Inc. are working together to offer DTS:X for IAB, a premier immersive sound system for cinemas worldwide.

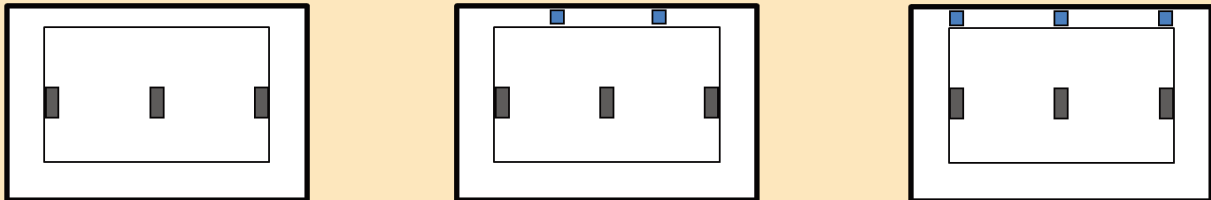


Advantages of DTS:X for IAB Technology

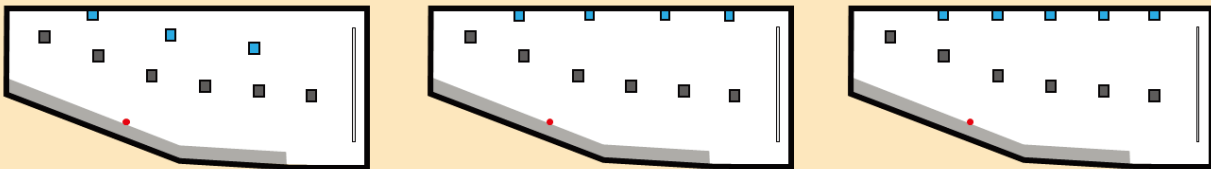
- Flexible speaker configurations enable installation in auditoriums of all different sizes.
- Retrofit theatres at lower cost, saving up to 50% compared to other 3D sound systems.
- Higher accuracy in conveying sound movement, with object-based audio technology.
- Backward compatible with 5.1, 7.1 and DTS:X systems.

DTS:X – Highly Flexible Speaker Configurations⁵

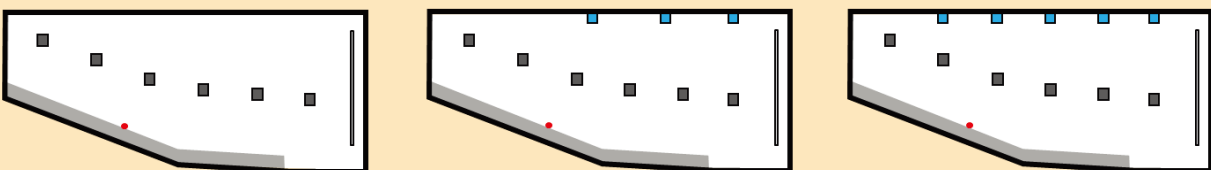
- DTS:X supporting IAB is based on up to three layers: the base layer, a height layer and a top layer.
- The base layer covers all the speakers in a typical 5.1 or 7.1 configuration.
- The height and top layers cover all the speakers above the listeners and support height effects.



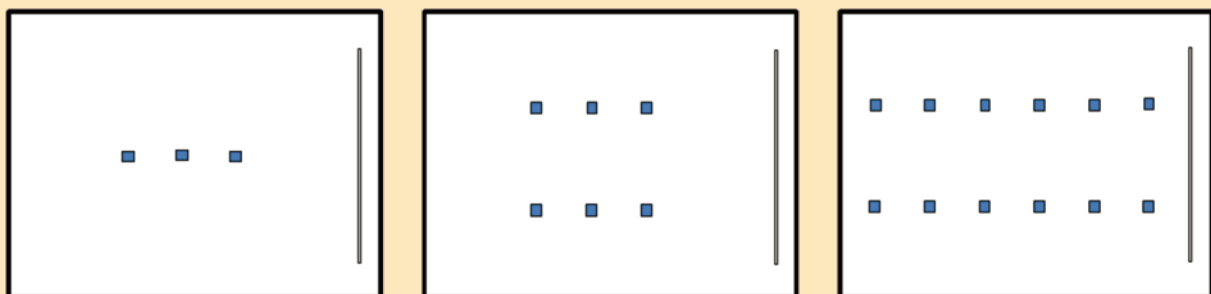
Front views showing screen wall speaker options



Side views showing sidewall speaker options for cinemas that do not use ceiling speakers⁶



Side views showing sidewall speaker options for cinemas that include ceiling speakers



Ceiling speaker options

⁵ The configuration diagrams are for reference only

⁶ DTS strongly recommends the use of ceiling speakers, this option is used for special project and is subject to DTS approval

Comprehensive Audio Solutions for the SR-1000 IMB

GDC presents a comprehensive range of optional audio converters specifically designed for the SR-1000 ensuring compatibility and smooth integration across multiple audio formats:

The Audio Interface Boxes AIB Series are equipped with either an 8-channel or 16-channel high-quality digital-to-analog converter (DAC) and offers auxiliary audio inputs, such as analog amplifiers, microphones, and media players, etc.

The Digital-to-Analog Converter DAC Series features 8, 12, 16, 24, and 32-channel configurations for analog output.

The AE-6703 32x32-channel Bidirectional Converter is engineered to bridge the gap between AES3 and AES67 audio standards.

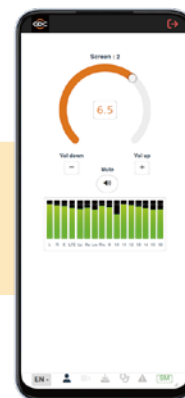


Remote Fader Control Effortlessly Manage Cinema Audio Volume

Introducing the Fader Remote FR-1000 and Fader Control FC-1000, designed to seamlessly integrate with GDC media blocks featuring built-in cinema audio processing.

FR-1000 Fader Remote

- Compact, perfect for any setup
- Cost-effective
- Expandable to accommodate future needs



FC-1000 Fader Control

- Rack-mounted device for seamless integration
- Straightforward operation for quick adjustments
- No server network login required for added convenience



FC-1000 Fader Control Technical Specifications

GDC Server Connection	GDC media blocks with built-in cinema audio processing
Network Input Port	1 x RJ-45
Rating	AC 100V - 240V 50/60Hz
Dimensions (WxHxD) mm	482 x 44 x 91
Net weight (kg)	1.25