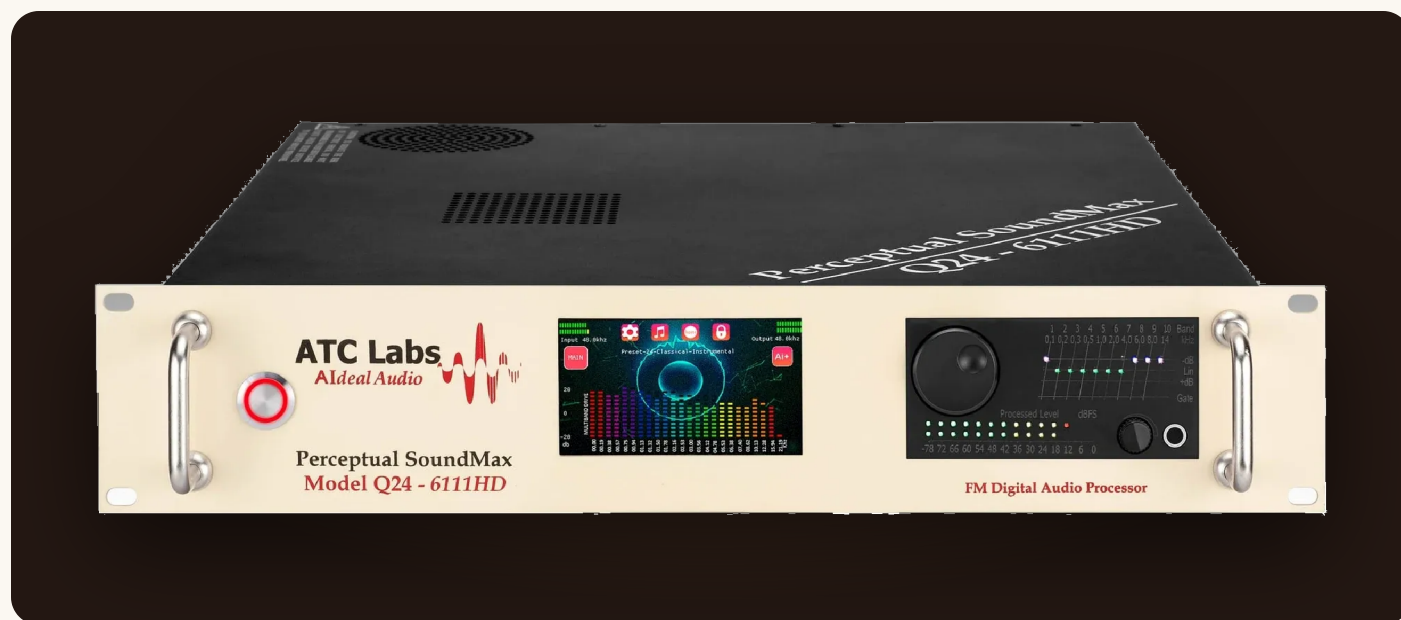


PERCEPTUAL SOUNDMAX™

Q24-6111HD

FM and up to 3 HD Radio or DRM
from one processor.

Every Service Shines with Its Own Signature SoundMax Sound.



24-band

Signature SoundMax audio processing

3 digital radio services

MAIN/HD1, HD2, HD3 — each on air and streamed

UP TO 12 s

diversity delay, accurate to ± 2 samples

2 ×

analog composite outputs, plus digital MPX · built-in RDS encoder

THREE SERVICES

Three services. *One 2U box.*

MAIN/HD1, HD2 and HD3 — each processed with its own 24-band profile, each on air and streamed online at the same time.

	01 MAIN / HD1	02 HD2	03 HD3
ON AIR	Analog FM + HD1, aligned by the diversity delay — up to 12 s, ± 2 samples	HD2 digital service, from the AUX input or AES67	HD3 digital service, from the AUX input or AES67
PROCESSING	Its own 24-band profile	Its own 24-band profile	Its own 24-band profile
STREAMMAX™ STREAM	With its own separate processing — the online sound can differ from air	Same sound as on air	Same sound as on air

AIDEAL AUDIO™ PROCESSING

The Signature SoundMax sound — *with AI at its side.*

- 01 Enhanced consistent loudness**

24-band processing packs far more audio density than 5- or 6-band processors — higher average modulation and wider coverage.
- 02 Crisp & clear sound**

Free of phase distortion and never over-processed: clarity, loudness and presence together.
- 03 Lively broadcasts**

Vocal, stereo-image and bass enhancement, and the sweetening tools, make the sound livelier and pleasing.
- 04 Embedded deep audio AI**

Patent-pending real-time multi-class classification — noise, speech, music, genre — adapts the processing.

The 24-band high-resolution core

Linear-phase processing in 24 psychoacoustically tailored bands; compression, limiting, expansion and gating in a single stage.

Dynamic Listening Fatigue Reduction

Unique to SoundMax: conditions the audio envelope in six bands to minimise listener fatigue.

SmoothClip™ look-ahead limiting

Loud, clean peaks, with the final level set for your transmitter or your codec.

The Aideal+™ genie

Recommends the best-matching profile, or keeps tuning toward your target — you approve before air.

Aided by AI

Deep-learning networks read noise profile, content, mood and genre, and gently adapt the processing — true to your profile.

Intelligent Loudness Control

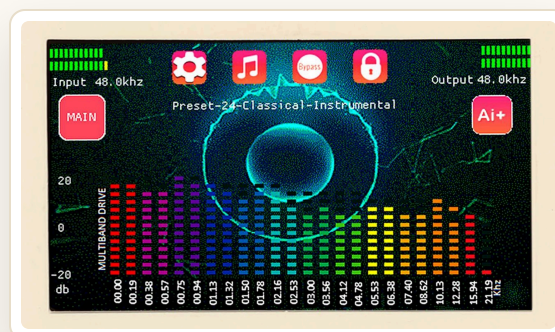
Steady, filling and consistent loudness, held at your target on every programme.

Noise reduction & SpatialMax™

Wideband noise removal, AI band noise gating, and SpatialMax™ to widen the sound stage.

18 genre presets + custom profiles

Refine any preset with 1000+ parameters and save unlimited custom profiles.



The front-panel touchscreen: 24-band drive meters, the active profile and the Ai+ button — with a knob, headphone socket and built-in test tones.

1000+ parameters on every path.

Basic and Advanced tuning from the front panel or from SoundMaxManager™ — per-band thresholds, attack and release, compression, expansion, graphic EQ and the two-band limiter.

ON AIR AND ONLINE

**FM composite + RDS**

- 2 × composite / MPX outputs (BNC), ITU-R BS 412, individual level up to +12 dBu
- Built-in RDS encoder: PI, PS, PTY, PTYN, dynamic PS, RT, RT+, TP/TA, CT, AF, MS
- Now-playing from automation in XML or UECP (EN 62106), over TCP or UDP
- Inputs for SCA or an external 19 kHz pilot, and an external RDS encoder
- Pilot 6–12 %; pre-emphasis 50 or 75 µs; digital MPX at 192 kHz

**Nielsen™ watermarking**

- Fully certified CBET encoding, in the box
- Its own watermarking on each service — MAIN/HD1, HD2, HD3
- Station SID and check digits, as issued by Nielsen
- Time-code insertion; radio mode; prior-watermark overwrite
- EAS handling built in; no external encoder

**StreamMax™ simulcast**

- **Three streams, one per service** — MAIN/HD1 with its own processing
- AAC, HE-AAC v1/v2 at 24–384 kbps; MP3 at 32–320 kbps
- Two-bitrate adaptive HLS, 3–10 s chunks
- CDN push incl. Amazon S3 (AWS SigV4); Icecast — yours or ATC's servers
- Built-in HTTP server; UDP unicast / multicast

Every input and output, *on one 2U panel.*

**ANALOG**

XLR in and out, balanced

AES/EBU MAIN

Input 32–192 kHz auto-sense · output

HD PATHS

HD1 out · HD2 and HD3 in and out, 44.1 / 48 kHz · digital MPX at 192 kHz

FM COMPOSITE

2 × BNC out with RDS · 2 × BNC in (SCA / pilot, external RDS)

NETWORK

Ethernet-1: AES67 · Ethernet-2: SoundMaxManager™, SNMP, streams

OTHER

USB 2.0 · GPIO (optional)

IN

Analog, AES/EBU, AES67 or a stream for MAIN; AES/EBU or AES67 for HD2 and HD3 — failsafe on the main input.

**PROCESS**

Three services, each with its own 24-band Aideal Audio™ profile — plus one for the MAIN/HD1 stream.

**ALIGN**

Diversity delay holds MAIN against HD1 for a seamless analog-digital blend.

**OUT**

Composite with RDS, MAIN/HD1, HD2, HD3, AES67 and three streams — all at once. Digital MPX at 192 kHz on a configurable AES output.

SoundMaxManager™

One PC controls every SoundMax on the network — and the front panel does the same on the unit itself.

- Finds SoundMax units on the network automatically; SNMP compliant
- Profiles, Basic and Advanced tuning — export and import between units
- Streaming set-up, stream input and AES67 in and out
- RDS encoder: the full RDS data set and the automation feed
- Monitoring, with firmware updates and configuration backup over the network

Also available: Q24-6111 — the same processing for FM and AM, with one stream.

Q24-6111HD Technical specifications

24 Band Audio Processing for Audio Quality Optimization

ANALOG AUDIO INPUT

Configuration	Left and Right / Stereo
Maximum Input Level / Impedance	+27dBu / >10kΩ
Nominal Input Level	Adjustable -10.0 to +13.0 dBu
A/D Convertor Resolution	24-bit
EMI Suppressed	Yes
Connectors	Balanced XLR Female

ANALOG AUDIO OUTPUT

Configuration	Left and Right / Stereo
Output Level	Adjustable -6.0 to +24 dBu
SNR	≥ 90 dB (20 Hz to 20 kHz)
Crosstalk	≤ -90 dB (20 Hz to 20 kHz)
Distortion	THD ≤ 0.01% (20 Hz to 20 kHz)
D/A Converter Resolution	24-bit
EMI Suppressed	Yes
Connectors	Balanced XLR Male

DIGITAL AUDIO INPUT (AES/EBU)

Configuration	Stereo
Sampling Rate	32/44.1/48/96/192 kHz (Auto Sense)
Word Length	16 bit or 24 bit
Input Reference Level	-25.0 to 0 dBFS
Connector	AES-XLR, Female

DUAL DIGITAL AUDIO OUTPUTS (AES/EBU)

Configuration	Two Stereo Outputs with Individual Software Level control
AES1	MAIN output or Digital MPX (configurable)
AES2	HD1 or DRM-Service A Output
Diversity Delay (1st w.r.t. to 2nd)	0-12 sec configurable with +/- 2 sample accuracy
Output Levels	-20.0 to 0 dBFS
Sampling Rate AES 1 (MAIN/MPX)	32, 44.1, 48 kHz (stereo MAIN) OR 192 kHz (Digital MPX)
Sampling Rate AES 2 (HD1/DRM+)	44.1 or 48 kHz (stereo)
Connectors	AES – XLR Male

AUDIO OVER IP INPUT/OUTPUT

Configuration	Stereo Input/Output follows AES67 standard. Compatible with Livewire, Ravenna, Wheatnet.
Connectors	Independent RJ-45

AUX1/AUX2 DIGITAL AUDIO INPUT/OUTPUT

Configuration	2 pairs of digital input/outputs for HD2/HD3 and DRM+ Service B/DRM+ Service C processing
AUX1/AUX2 Inputs	XLR-Female connectors for AES digital input with auto sensed sample rate (44.1/48 kHz allowed)
AUX1/AUX2 Outputs	XLR-Male connectors for AES digital outputs, sample-rate follows AUX1 and AUX2 inputs respectively.

COMPOSITE BASEBAND OUTPUT

Configuration	Two Outputs with Individual software level Control
Maximum Output Level (unbalanced)	+12dBu
D/A Conversion	24 Bits
Signal to Noise Ratio	≥ 90 dB (20Hz-15kHz)
THD	≤ 0.01% (20 Hz to 15 kHz)
Stereo Separation	≥ 60 dB (20 Hz to 15 kHz)
Cross Talk	≤ 90 dB, channel to channel
38 kHz Suppression	> 90 dB
Pilot Protection	65 dB relative to 9% injection, +/- 500 Hz
57 kHz (RDS) Protection	> 60 dB relative to 4% injection, +/- 2 kHz. In box RDS Encoder
Connectors	Coaxial BNC, EMI-Suppressed

COMPOSITE BASEBAND INPUT

Configuration	Two coaxial BNC inputs configurable as Pilot/RDS/SCA
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ETHERNET & REMOTE PC MANAGEMENT CONTROL

Configuration	Auto Presence Broadcast on Ethernet
Powerful SoundMax Manager Software	on any networked PC for monitoring configuration & control.
Connectors	RJ-45, EMI-Suppressed

STREAMING AUDIO OUTPUT

Configuration	Up to 3 Internet stream outputs. 1 x Internet Stream Out for MAIN. 2 x Internet Stream Out for AUX1/HD2 & AUX2/HD3
Encoding formats	Enhanced AAC Profiles: LC, HE-v1, HE-v2; MP3
Encapsulation Format	ADTS or MPEG2-TS for AAC; MP3 or MPEG2-TS for MP3
Bitrates	32-256 kbps for AAC; 32-320 kbps for MP3
HLS Generation	Up to 2 bit rates for adaptive HLS; Chunking 3-10 sec (soft-configurable)
Distributions	CDN Primary/Secondary Push/Post · External Icecast Servers · In-built HTTP server for direct pull of AAC/MP3/HLS · UDP Unicast/Multicast
Player Compatibility	iPhone / Android, VLC, WMP
Browser Compatibility	Edge, Chrome, Safari, Mozilla

POWER

Power Requirements	105-260 V AC, 45-60 Hz
Connector	IEC, EMI Suppressed, Detachable 3-wire chord with earthing.
Safety Standards	UL, CE

DIMENSIONS

Width / Height / Depth	19" · 2U (3.5") · 16.9"
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ENVIRONMENT

Weight	About 5.5 Kg
Working Altitude	3000 meter AMSL
Operating Temperature range	0° to 50° C
Relative Humidity	95%

Due to constant upgradation the above speciation are subject to change without intimation.

AFTER-SALES & SERVICE

Engineered with premium components for 24/7 continuous operation. ATC Labs provides 24x7 after-sales and service support from its own team, with software upgrades as part of that support.

ABOUT ATC LABS

Founded by former Bell Labs researchers, ATC Labs brings decades of signal-processing and acoustics expertise to broadcasting — its technology serves over 20 million listeners through FM, satellite and internet radio worldwide.

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