

12 SERIES





Performance engineering – The Rotel heritage



There are few audio manufacturers that can claim as long a track record of innovative, high performance, affordable audio engineering as Rotel. And we're proud of it. Rotel was founded half a century ago on a philosophy of manufacturing products of the highest performance and quality combined with finely judged, cost-optimised engineering. We call this philosophy the Balanced Design Concept and it informs every engineering decision we take and every product we make.

But while our philosophy doesn't change, the audio landscape does, and since the launch of our 06 SE Series it has changed fundamentally. File downloads, internet radio, wireless streaming, iPad® and iPhone® compatibility, and high-resolution audio are all now all established elements of everyday music. So with the 12 Series we've brought the Balanced Design Concept to bear on the new audio landscape. The results are nothing short of extraordinary.

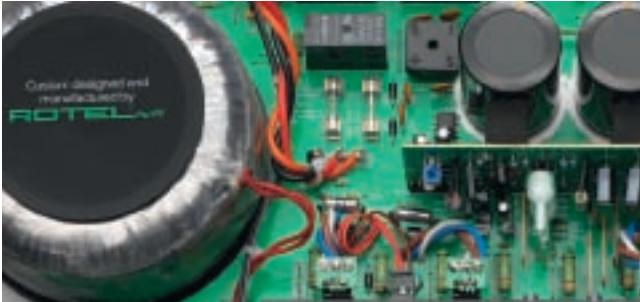
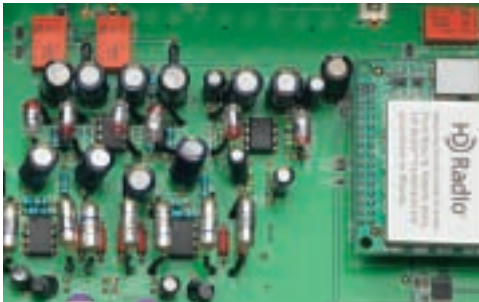
Audio mastery – Global development

Creating audio products of such exceptional performance that they can wear the Rotel badge is impossible without understanding: understanding to the deepest level exactly how audio electronics, electro-acoustics and psycho-acoustics conspire to influence the reproduction of music. Without understanding, the fine engineering judgements – knowing where economies are possible, and knowing where budget must be spent – have no context. Without understanding, engineering decisions might just as well be made by chance.

Our understanding comes partly through the experience hard-wired into the Rotel DNA. Rotel is unlike any other audio manufacturer. We are a family owned organisation, with all the stability and commitment that family brings. We are smaller than perhaps you might imagine, although not so small that we are unable to reach for our aspirations. And we have five decades in the business of making audio electronics sound greater than the sum of its parts, and sound much more like music in the process.

Rotel is also far from typical in its global approach to design and product development. While our roots are in Japan and our designers are located there, we know people the world over who can help us refine our products by bringing unique perspectives to their development. So we never hesitate to tap into those resources of knowledge and experience. In particular our development team in the UK plays an important role in fine tuning every Rotel product. Somebody once said, "a good idea doesn't care where it came from". It could easily have been said by one of the Rotel family.





At Rotel, extraordinary sound at unexceptional cost is the natural order of things. And it comes about because our engineers and designers practice the Balanced Design Concept. The concept strikes a balance between the cost-no-object engineering of high-end audio engineering and the simple “bean counting” approach that underpins the design of most mass-market electronics. Performance and cost in equilibrium. The Balanced Design Concept is second nature to our engineers because they are themselves music lovers who nurture their designs like doting parents. It has just two simple laws:

1. The best-sounding components are not necessarily the most costly;
2. No single design element should be emphasised if it causes performance in any other part of the product to suffer.

We apply the rules to four key stages in the design process: when we’re engineering the power supply and the circuit layout, and when we’re evaluating the product and selecting components.



Component selection

Rotel engineers spend many hours auditioning and selecting electronic components from potential suppliers to give our products the best reliability and acoustic advantages. It costs a little more, but the benefits further differentiate Rotel quality from other manufacturers.

Circuit topology

It’s not enough simply to use better components. Where you put them is equally important. That’s why we rely heavily on something we call Symmetrical Signal Trace design. The principle of Symmetrical Signal Trace is to keep each audio channel signal path identical in order to preserve imaging and sound staging. Symmetrical Signal Trace also implies the use of ‘star’ grounding (terminating all signal and power supply earths at a single point) which further benefits audio performance by helping maximise signal to noise ratios.

Critical evaluation

Human hearing is more discerning than the most sophisticated test instruments in the hands of experienced engineers. So at Rotel we listen throughout the development process, not just at the pre-production prototype stages. Rather like a chef tasting throughout the process of creating a dish, we listen at every stage throughout the process of design to ensure the performance of a new model is as good as it can possibly be.

Power supply

Power supply lies at the heart of any high-quality audio equipment, and our engineers always commit substantial effort on designing and analysing this vital component. Everything from the physical layout and wiring to the careful selection of smoothing and reservoir capacitors gets the upmost attention. And at every stage of the development process, upmost in our designer’s minds is to consider how the power supply will influence sound quality.



Audio for a connected world

If one word were used to describe the nature of the new audio landscape, that word might be 'connections'. Connections to the outside world through the internet brings music into the home via downloads and streaming. And connections between audio products within the home bring shared media and control potentially across multiple rooms. So the 12 Series products embrace connectivity to a degree like few products before. For example, both the RA-11 and RA-12 integrated amplifiers support audio streaming over Bluetooth via a USB dongle. Both integrated amplifiers also, along with the RCD-12 CD player, can be connected via Rotel Link to the RT-12 internet radio/UPnP player to create an integrated system controlled by the Rotel Remote app for iPhone and iPad. Trigger inputs and outputs are also fitted to some 12 Series products that enable their integration with custom installation multi-room audio systems.



DAB+, FM and Internet radio

Radio always was magical, but the internet and DAB+ have raised the magic to new heights. Radio has exploded to become an audio window on almost the entire world. Whatever your audio interest, DAB+ and the internet can deliver it – in almost unlimited variety.

RT-12 Internet radio, DAB+/FM tuner, UPnP player



The RT-12 is an FM and DAB+ preset radio tuner and much more besides. By incorporating network capabilities, the RT-12 can bring thousands of internet radio broadcasts into your life and it can play audio files stored on UPnP servers such as Windows computers. If your computer is home to a library of music files and you have wondered about playing them over your hi-fi, the RT-12 is your answer. The RT-12 boasts digital to analogue conversion based on the Wolfson WM8740 DAC chip to ensure that each digital source retains every last drop of musical quality, and it can serve as the wireless hub for the Rotel iPhone and iPad Remote app to control the entire hi-fi system.



DAB and DAB+ The advantages of DAB are well known: data-rich broadcasts with consistent and robust audio quality. DAB+, available now in some territories and coming to many more, builds on DAB with better sound quality and even more robust reception. The RT-11 and RT-12 can reproduce both DAB and DAB+ broadcasts.

RT-11 Stereo DAB+/FM tuner



For many music enthusiasts there is still a place for a more traditional stereo tuner. The RT-11 offers very high performance reproduction of both FM and DAB+ broadcasts and provides a perfect solution for those who simply need a great sounding radio. While the RT-11 is a traditional tuner, that doesn't mean it misses out on our 12 Series commitment to extracting the best possible audio performance and the largest selection of music. So the RT-11 benefits in exactly the same manner as its siblings from the careful selection of every critical component and from the full energy of our global product development network.

CD player

The wealth of music available on CD still grows and the RCD-12 is the perfect player to exploit new discs, as well as old favourites.

RCD-12

Compact disc player



Even after three decades of the compact disc the RCD-12 demonstrates that there is still more performance to be found from CD players. In common with its partners in the 12 Series, digital to analogue conversion is handled by the Wolfson WM8740 DAC chip. The WM8740 is more usually found in CD players at the very top of high-end audio and if you are ever intrigued to know just how your favourite CDs would sound on the world's finest players, the RCD-12 will get you to within a hair's-breadth.

In common with other 12 Series products, the RCD-12 can be controlled through either its front panel buttons and display, via its remote control handset, or via Rotel Link to an RT-12 and the Rotel Remote app for iPhone and iPad.



Integrated amplifiers

Rotel RA amplifiers can trace their lineage almost to the beginning of 'separates' hi-fi, and they have always been the embodiment of affordable high performance. In that respect the 12 Series integrated amplifiers offer no change.

RA-12

Integrated amplifier



The amplifier has always been the heart of a hi-fi system, but for the new audio landscape, amplifiers need 'brains'. The brain of the RA-12 is the Wolfson WM8740 24 bit/192kHz DAC, most often found in high-end audio products, and it ensures that the RA-12 extracts the full potential from its digital and Apple® authorised USB inputs. Traditional audio is not forgotten however so the RA-12 also provides four analogue line-level inputs and a phono input. The RA-12 can be controlled from its front panel buttons, via a remote handset, or via an RT-12 and the Rotel Remote app for iPhone and iPad. The RA-12 is however not just about versatility, it is a very high performance 60 Watts per channel amplifier that puts music at the top of its priorities.



Bluetooth over USB The RA-12 and RA-11 USB sockets are not just for iPod®, iPhone and USB memory stick music. Connect the supplied Bluetooth dongle and you can stream music directly to the amplifier from your iPhone, iPad or many other Bluetooth streaming devices.

RA-11

Integrated amplifier



The RA-11 carries a similar set of features to the RA-12 but is slightly less powerful at 40 Watts per channel and is constructed in a slimline enclosure. Just like the RA-12, every critical signal chain component is selected to ensure that music from the RA-11 is delivered with as much detail, dynamics, clarity and emotion as possible. The RA-11 incorporates the same high-end Wolfson WM8740 24 bit/192kHz DAC chip as the RA-12 and the same complement of five conventional analogue inputs, four S/PDIF digital inputs, and an Apple authorised USB input. The RA-11 can be controlled through either its front panel buttons, via a remote handset, or an RT-12 and the Rotel Remote app for iPhone and iPad.



RA-10

Integrated amplifier



There is occasionally much to be said in favour of stripping back to the fundamentals and the RA-10 is definitely one of those occasions. The RA-10 offers 40 Watts per channel, four analogue line level inputs, a phono input and traditional integrated amplifier controls that will feel comfortable and intuitive to every user. The RA-10 is no lightweight however. It is a serious high performer that benefits from all our efforts dedicated towards optimising audio electronics for the reproduction of music. The RA-10 brings a clarity and effortless dynamism to music that belies both its modest ambitions and modest price.

Specifications

RT-12
Internet radio / DAB+ / FM tuner



FM Tuner	
Usable Sensitivity	22.2dBf
50dB Quieting Sensitivity	27.2dBf (mono)
Signal to Noise Ratio (at 65 dBf)	63dBf (mono) 60dBf (stereo)
Harmonic Distortion (at 65 dBf)	0.2% (mono) 0.3% (stereo)
Frequency Response	10Hz-15kHz, ±3dB
Stereo Separation (100/1kHz/10kHz)	40dB/45dB/35dB
Output Level	1.0V
Antenna Input	75Ω unbalanced

DAB+ Tuner	
Sensitivity	-80dBm
Tuning Range Band III	174-240MHz
Audio Data Rate	320Kbps (Max)
Frequency Response	20 - 20KHz +/- 1.0dB
Analogue Output	2.1V at 0dBFS
Antenna Input	75Ω F connector

Networks	
Network Connection	802.11b/g
Security	WEP, WPA1 (TKIP) , WPA2 (TKIP)
File Formats (UPnP Music Server)	AAC, MP3, WMA (except lossless), OGG Vorbis, WAV, AIFF, FLAC and AU

General	
Power Consumption	16Watts
Standby Power Consumption (Normal Mode)	0.5Watts
Power Requirements (AC)	120V, 60Hz (USA) 230V, 50Hz (Europe)
Weight (Net)	5.1kgs (11.24 lbs)
Dimensions (W x H x D)	430 x 93 x 330mm (17 x 3 5/8 x 13ins)
Front Panel Height	80mm (3 1/8ins)
Finishes	Black, Silver

RT-11
DAB+ / FM tuner



FM Tuner	
Usable Sensitivity	22.2dBf
50dB Quieting Sensitivity	27.2dBf (mono)
Signal to Noise Ratio (at 65 dBf)	63dBf (mono) 60dBf (stereo)
Harmonic Distortion (at 65 dBf)	0.2% (mono) 0.3% (stereo)
Frequency Response	10Hz-15kHz, ±3dB
Stereo Separation (100/1kHz/10kHz)	40dB/45dB/35dB
Output Level	1.0V
Antenna Input	75Ω unbalanced

DAB+ Tuner	
Sensitivity	-80dBm
Tuning Range Band III	174-240MHz
Audio Data Rate	320Kbps (Max)
Frequency Response	20 - 20KHz +/- 1.0dB
Analogue Output	2.1V at 0dBFS
Antenna Input	75Ω F connector

Networks	
Network Connection	N/A
Security	
File Formats (UPnP Music Server)	

General	
Power Consumption	10Watts
Standby Power Consumption (Normal Mode)	0.5Watts
Power Requirements (AC)	120V, 60Hz (USA) 230V, 50Hz (Europe)
Weight (Net)	4.3kgs (9.48 lbs)
Dimensions (W x H x D)	430 x 73 x 330mm (17 x 2 7/8 x 13ins)
Front Panel Height	60mm (2 3/8ins)
Finishes	Black, Silver

RCD-12
CD player



Total Harmonic Distortion + Noise	0.0045%@1kHz
Intermodulation Distortion	0.0045%@1kHz
Frequency Response	(±0.5db) 20-20,000Hz
Channel Balance	±0.5db
Phase Linearity	±0.5degree
Channel Separation	> 98dB@1kHz
Signal to Noise Ratio	>100dB
Dynamic Range	>96dB
Digital to Analogue Converter	Wolfson
Analogue Output Impedance	100Ω
Digital Output	0.5Volt, Peak to Peak
Digital Output Impedance	75Ω

General	
Power Requirements (AC)	120V, 60Hz (USA) 230V, 50Hz (Europe)
Power Consumption	15Watts
Standby Power Consumption	0.5Watts
Dimensions (W x H x D)	430 x 93 x 313mm (17 x 3 5/8 x 12 5/16ins)
Panel Height	80mm (3 1/8ins)
Weight (Net)	5.4kgs (11.9lbs)
Finishes	Black, Silver

RA-12
Integrated amplifier



Continuous Power Output	60Watts/ch (20-20kHz, < 0.03%, 8Ω)
Total Harmonic Distortion (20Hz-20kHz)	< 0.03% at rated power
Intermodulation Distortion (60 Hz:7 kHz, 4:1)	< 0.03% at rated power
Frequency Response	Phono input 20Hz-15kHz, ±0.3dB Line Level Inputs 10Hz-100kHz, ±1dB Phono input 2.5mV / 47 k Ω Line Level Inputs 150mV / 24 k Ω Phono input 180mV Line Level Inputs 5V
Input Sensitivity / Impedance	
Input Overload	
Preamp Output / Impedance	1V / 470Ω
Tone Controls - Bass / Treble	±4 dB at 100Hz / 10kHz
Signal to Noise Ratio (IHF "A" weighted)	Phono input 80dB Line Level Inputs 100dB

Digital Section	
Frequency Response	10Hz-95kHz ±3.0dB (MAX)
Signal to Noise Ratio (IHF "A" weighted)	100dB
Input Sensitivity/Impedance	0 dBfs/75Ω
Pre-out/Impedance	1.2V/470Ω (at -20dB)
Decodable Front USB/iPod Digital Signals	AAC (m4a), WAV, MP3, WMA (up to 48K 16bit)
Coaxial/Optical PCM	LPCM
File Formats	Real Audio, MP3, OGG Vorbis, WAV, AIFF and AU

General	
Power Requirements (AC)	120V, 60Hz (USA) 230V, 50Hz (Europe)
Power Consumption	300Watts
Standby Power Consumption	0.5Watts
Dimensions (W x H x D)	430 x 92 x 342mm (17 x 3 5/8 x 13 1/2ins)
Panel Height	80mm (3 1/16ins)
Weight (Net)	8.02kg (18lbs)
Finishes	Black, Silver

RA-11
Integrated amplifier



Continuous Power Output	40Watts/ch (20-20kHz, < 0.03%, 8Ω)
Total Harmonic Distortion (20Hz-20kHz)	< 0.03% at rated power
Intermodulation Distortion (60Hz:7kHz, 4:1)	< 0.03% at rated power
Frequency Response	Phono input 20Hz-15kHz, ±0.3dB Line Level Inputs 10Hz-100kHz, ±1dB Phono input 2.5mV / 47 k Ω Line Level Inputs 150mV / 24 k Ω Phono input 180mV Line Level Inputs 5V
Input Sensitivity / Impedance	
Input Overload	
Preamp Output / Impedance	1V / 470Ω
Tone Controls - Bass / Treble	±4 dB at 100Hz / 10kHz
Signal to Noise Ratio (IHF "A" weighted)	Phono input 80dB Line Level Inputs 100dB

Digital Section	
Frequency Response	10Hz-95kHz ±3.0dB (MAX)
Signal to Noise Ratio (IHF "A" weighted)	100dB
Input Sensitivity/Impedance	0 dBfs/75Ω
Pre-out/Impedance	1.2V/470Ω (at -20dB)
Decodable Front USB/iPod Digital Signals	AAC (m4a), WAV, MP3, WMA (up to 48K 16bit)
Coaxial/Optical PCM	LPCM
File Formats	Real Audio, MP3, OGG Vorbis, WAV, AIFF and AU

General	
Power Requirements (AC)	120V, 60Hz (USA) 230V, 50Hz (Europe)
Power Consumption	220Watts
Standby Power Consumption	0.5Watts
Dimensions (W x H x D)	430 x 72 x 342mm (17 x 2 7/8 x 13 1/2ins)
Panel Height	60mm (2 3/8ins)
Weight (Net)	6.39kg (14lbs)
Finishes	Black, Silver

RA-10
Integrated amplifier



Continuous Power Output	40Watts/ch (20-20kHz, < 0.03%, 8Ω)
Total Harmonic Distortion (20Hz-20kHz)	< 0.03% at rated power,
Intermodulation Distortion (60Hz:7kHz, 4:1)	< 0.03% at rated power,
Frequency Response	Phono input 20Hz-15kHz, ±0.3dB Line Level Inputs 10Hz-40kHz, ±1dB Phono input 2.5mV / 47 k Ω Line Level Inputs 150mV / 24 k Ω Phono input 180mV Line Level Inputs 5V
Input Sensitivity / Impedance	
Input Overload	
Preamp Output / Impedance	1V / 470Ω
Tone Controls - Bass / Treble	±6dB at 100Hz / 10kHz
Signal to Noise Ratio (IHF "A" weighted)	Phono input 80dB Line Level Inputs 100dB

Digital Section	
Frequency Response	N/A
Signal to Noise Ratio (IHF "A" weighted)	
Input Sensitivity/Impedance	
Pre-out/Impedance	
Decodable Front USB/iPod Digital Signals	
Coaxial/Optical PCM	
File Formats	

General	
Power Requirements (AC)	120V, 60Hz (USA) 230V, 50Hz (Europe)
Power Consumption	220Watts
Standby Power Consumption	N/A
Dimensions (W x H x D)	430 x 72 x 342mm (17 x 27/8 x 131/2ins)
Panel Height	60mm (2 3/8ins)
Weight (Net)	5.9kg (13lbs)
Finishes	Black, Silver

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