

REVOX

The Philosophy of Excellence

Digital-Aktive Lautsprechersysteme Digital-Active Loudspeakersystems



Scala 3.6



Prestige Digital

The absolutely new dimension of listening

DIGITAL-ACTIVE LOUDSPEAKERSYSTEMS

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1.0 The History

Since the invention of the phonograph, generations of investigators and engineers have worked to make perfect the quality of audio record and playback.

The power spring of these efforts is and was the dream of human beings to hold tight for ever irretrievable moments and, particularly, impressive musical experiences, and thus to make repeatable, so to say „live to hear“ again.

It's the goal to capture, to conserve, and to maintain for the posterity the fascination of the instant underwent via our senses. This fascination shall then be able to be echoed as really as possible at any time independently of location, time, and room.

The existing exhibits of painting, of photography, but not least of the modern technical media like movie, television, and video, are witnesses of this desire to „copy“ continuously these original, moment-bound events. With the invention of digital transformation and storage of tones and sounds one has come nearer to this goal by a formidable step.

Revox - since the foundation more than 50 years ago devoted to the storage and playback of sounds in a quality as high as possible - in recent years has taken care of the limb of the chain supposed as the weakest, in the most intensive and successful way: the loudspeaker.

In long-years' most intensive developmental work a system has arisen which opens a completely new dimension of sound reproduction. In cooperation with sound engineers from all over the world and by investments in an amount of millions it has been done to create the most exact speaker.

With the digital-active loudspeakersystems by Revox are abolished all faults hitherto well-known and relevant for playback of music as well as the weaknesses of conventional active and passive speakers inherent in construction. The intelligent compensations and controls are performed digitally and will enable this system to render any kind of music in an absolutely unadulterated way and in the best sense „naturally“.

By this digital signal processing Revox finally succeeded in completely compensating disturbing time delays. The fact that there are no completely phase-independent speaker chassis has prompted our engineers to make remedies once again. The result of this extensive work is the Revox patented circuitry principle of the negative output impedance for all speakers involved, which cares for correct rendering of pulses. This ensures an extremely dynamic and 'live' feeling of the music as close as possible to the original and the result is a perfect sound impression within the whole transmission range. The capability of exactly tracing natural timbres of voices and instruments is the absolutely unsurpassed force of the digital-active speaker systems by Revox.

The matter of course and the sovereignty in transforming any sound event into „acoustic experience“ are the sources of the intrinsic fascination of these „modifiers“.

They incorruptibly, neutrally, and authentically transform the digital audio signals offered to them in acoustic vibrations. These are characterized by unsurpassed precision and are perceived - at least under living room conditions - in nearly unlimited dynamics.

We experience the nearly perfect illusion of the original happening.

The circle closes!

The capability of experiencing again one-time musical events true to the original in the own four walls has a name:

Revox digital-active speaker systems.

2.0 The products

2.1 Scala 3.6 - Re-defining high-end

The slim Scala 3.6 stands for legendary Swiss quality and combines refined technology with elegant, timeless design. Audiophiles who are tired of their flats looking like sound studios will love these speakers. In short: a totally new dimension of listening for you to discover. You can directly connect a digital source to the Scala 3.6 as the speakers are based on digital signal processing. Therefore, all you need to listen to music is, for example, a CD player with digital output. The Scala 3.6 digital loudspeaker marks the beginning of a new era in the history of perfect music reproduction. Our engineers have completely eliminated system-related loudspeaker faults by consistently and comprehensively implementing digital technology.

Each loudspeaker houses three 130 W power amplifiers and six drivers. Four paralleled long throw woofers, a midrange speaker, and a treble dome ensure an impressive sound pressure level.

Technical Data - Scala 3.6

Acoustics:

Frequency range:	31 Hz - 20 kHz (-3 dB)
Distortion:	max. 0.9% (96 dB SPL / 1m, low-reflection room)
Sound pressure level:	min. 105 dB SPL (1m, 1kHz with 100 Hz wobbled, low-reflection room)
Speaker chassis:	Bass 4 x 155 mm Mid-range 1 x 155 mm Treble dome 1 x 25 mm

Electrical:

Audio connectors	Cinch, digitally: AES EBU, SP/DIFF
Input (Master):	4 pin. XLR > Connection to Slave
Output (Master):	3 x 130 watts max (per speaker)
Amplifier:	Phase-linear digital filter
Special features:	

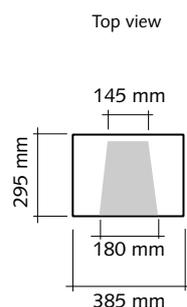
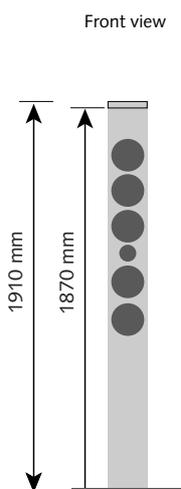
Dimensions:

Cabinet:	1870 mm x 180 mm x 250 mm (h front x w front x d) 1910 mm x 145 mm (h rear x w rear)
Socket :	20 mm x 395 mm x 295 mm (h x w x d)

General Data:

Power supply:	230 volts / 500 VA
Weight:	appro. 48 kg. (Master) appro. 46 kg (Slave)
Cabinet surface, colors:	real-wood veneer cherry tree, Silver metallic Other colors, surfaces upon request

Subject to change without notice



2.2 A new milestone in digital Technology

- Prestige Digital

Based on the technology we have already successfully implemented in the Scala 3.6, we have developed another highlight in the Digital-Active Loudspeakersystems. Even slimmer in the dimensions, the Prestige Digital is equal to the big brother Scala in every way. Equipped with 8 bass-chassis, this 'modifier' converts the offered digital signals with the same superiority and also easily into an 'acoustic experience'.

The special and extremely complex construction of the cabinet enables us to reach these slim dimensions. Speaker chassis, specially developed and manufactured according to the newest speaker technology, enable the Prestige Digital to reproduce all kind of music 'purely' and 'naturally' in best possible matter. Incorruptible, neutral and authentic, that's the way this speaker converts the digital signals into acoustic vibrations.

Additionally, by using extremely complex and expensive technologies in manufacturing, we can offer you brushed aluminium as the surface for this cabinet. This can also be added to the fascinating charm of this 'modifier'.

Technical Data - Prestige Digital

Acoustics:

Frequency range:	40 Hz - 20 kHz (-3 dB)	
Distortion factor:	max. 1% (93 dB SPL / 1m, low-reflection room)	
Sound pressure level:	min. 104 dB SPL (1m, 1kHz with 100 Hz wobbled, low-reflection room)	
Speaker chassis:	Bass	8 x 116 mm
	Mid-range	1 x 116 mm
	Treble dome	1 x 25 mm

Electrical:

Audio connectors	
Input (Master):	Cinch, digitally: AES EBU, SP/DIFF
Output (Master):	4pol. XLR > Connection to Slave
Amplifier:	3 x 130 W max (per speaker)
Features:	Phase-linear digital filters

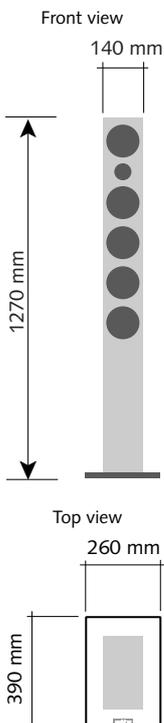
Dimensions:

Cabinet:	
Height (incl. socket):	1270 mm
Width:	140 mm
Depth:	270 mm
Socket (W x h):	260 x 390 mm

General data:

Power supply:	230 V / 500 VA
Weight:	ca. 28 kg (Master) ca. 26 kg (Slave)
Cabinet surface, color:	Aluminum

Subjects to change without notice



2.3 The interface - DLC-2

The Revox DLC-2 acts as interface between digital (e.g. CD player, MD recorder or CD recorder) and analogue sound sources (e.g. FM tuner or tape deck) on the one hand and the Revox digital active loudspeaker systems on the other hand.

For operation in conjunction with analogue devices, the DLC-2 houses a state-of-the-art analogue-to-digital converter, that converts analogue input signals to digital format. Moreover, the DLC-2 controls the digital loudspeakers; its integrated IR receiver passes commands to the speakers, such as switch on/off, change in volume, bass, treble or balance. Signals coming from digital sources are transmitted to the loudspeakers without alterations in order to avoid any loss in quality.

The DLC-2 does not feature any operating elements. You operate the DLC-2 using the IR remote control. The switches on its back panel are for adjusting to the level of the incoming analogue signals, a process which you need to perform only once.

The LEDs on the front panel show the selected input and an overload of the analogue input, and a numeric display indicates the selected volume level.

Power supply is ensured by the enclosed power adapter (12V DC, 250 mA).

The DLC-2 and the Revox Exception hi-fi system are two of a kind. If you want the two to act as one system, connect the plug on the end of the DLC-2 lead (back panel) to any Revox link socket of the Exception hi-fi system. Now, you can operate the DLC-2 and the digital loudspeaker system from the E 450 Exception amplifier; you can change all parameters, such as volume, bass, treble and balance, from the keys on the amplifier and read the corresponding settings on its display. As the DLC-2 is of modest height, it can be placed directly under the E 450, where it is almost invisible.

Technical Data - DLC-2

Audio

Inputs:	Analogue 1 - 2,51volts/ 47 kohms (adjustable) Digital 1 Coax (electrical) Digital 2 TOSLINK (optical)
Output:	Digital Coax (electrical)
A/D converter:	24-bit Delta-Sigma
Harmonic distortion:	0.003 % (-3 dB FS)
Signal-to-noise-ratio:	100 dB
Crosstalk attenuation:	90 dB (1kHz)
Frequency range:	20 Hz - 20 kHz (-0,3dB)

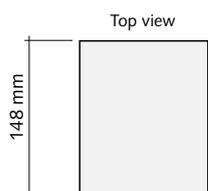
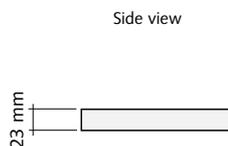
Dimensions:

W	120 mm	4.7 ins
H	23 mm	0.9 ins
D	148 mm	5.8 ins

General

Line voltage:	depends on power supply	
Power consumption:	3.4 watts (maximum)	
Operating conditions: (complies with DIN 40040)	+10 – 40 °C	
Weight	0.45 kg	0.2 lbs

Specifications are subject to change without notice.



3.0 *Technical details*

3.1 *Digital-Active Loudspeakersystem - whats' that?*

The Revox digital-active loudspeakersystems consist of three parts:

1. A loudspeaker box housing with specially built, high-quality loudspeaker drive units.
2. A digital signal processor (DSP) by Motorola, embedded in an electronic unit, for all digital signal processing. This DSP is responsible for filtering the signals, distributing them to the individual frequency ranges, and thus to the individual power amplifiers. The input of the electronic unit accepts digital output signals of various sources, such as a CD-Player, a DAT-Recorder or a MD-Recorder. The unit automatically recognizes the sampling frequencies (32 kHz, 44.1 kHz, 48 kHz) of the different systems and adapts accordingly.
3. Three 130 watts power amplifiers in each box for driving the loudspeaker drive units. As the speakers come with built-in power amplifiers, there is no need for additional amplifiers for operation nor for an annoying search for the right loudspeaker cables.

Future trends will probably be characterized by an increasing importance of digital signal sources, e.g. DAB, DVB. So, buying a digital-active loudspeakersystem means getting ready for the digital age.

3.2 *Master-Slave Concept*

In order to protect the system from external interference, the digital electronic unit has been designed as tight as possible. Additionally, this unit is extensively shielded and mounted in only one loudspeaker. For this purpose, a highly complex 4-layer board, which normally is exclusively found in high-performance computers, is used.

While one loudspeaker houses the digital electronic unit for both channels left and right as well as the power amplifiers for one side (master), the other speaker comes equipped with only the necessary power amplifiers for its side (slave). Such a concept guarantees a high degree of operational safety and excellent results.

3.3 *What is delay compensation by means of digital technology?*

The problem is as follows:

Traditional passive and analogue active crossover networks lead to long frequency-dependant time delays. This means that the different frequencies of a piece of music leave the crossover network at different times, whereas during a live performance of a music instrument, all frequencies are emitted simultaneously. The lower the limit frequency of the network, the worse the time delay. Therefore, the part of the network which is responsible for the bass range introduces the longest time delay, and the part responsible for the tweeter the shortest.

In addition, so-called delay distortions occur due to varying driver dimensions. In a loudspeaker, as in an electromagnet, the voice coil is forced to move by electric current. Since the tweeter is much smaller than the woofer, the tweeter's voice coil is placed nearer to the front of the loudspeaker, which results in an additional delay.

In consequence of these two delays, high frequencies always reach the human ear first with conventional loudspeakers. Extensive scientific tests have shown that the human ear is capable of perceiving such differences if they are of a certain degree.

By means of digital technology, Revox is now in a position to ensure a consistent signal processing time for all frequencies. When using a digital crossover network, distortions, which a passive or analogue active crossover network would cause, are compensated for as well as delays which are due to the loudspeaker drivers. To achieve this goal, extensive testing and innumerable series of measurements at our lab have been necessary. However, we think that our efforts have been worthwhile.

Our Digital-Active Loudspeakersystems deliver a lifelike reproduction of music, i.e. all frequencies reach your ear simultaneously as if you were enjoying a real performance.

3.4 *Negative Impedance*

Each loudspeaker driver has a copper wire voice coil which acts as an ohmic resistor. Since it is a coil, it also constitutes of course a complex AC resistance, an inductivity. Together with the diaphragm, those two resistors form the so-called impedance.

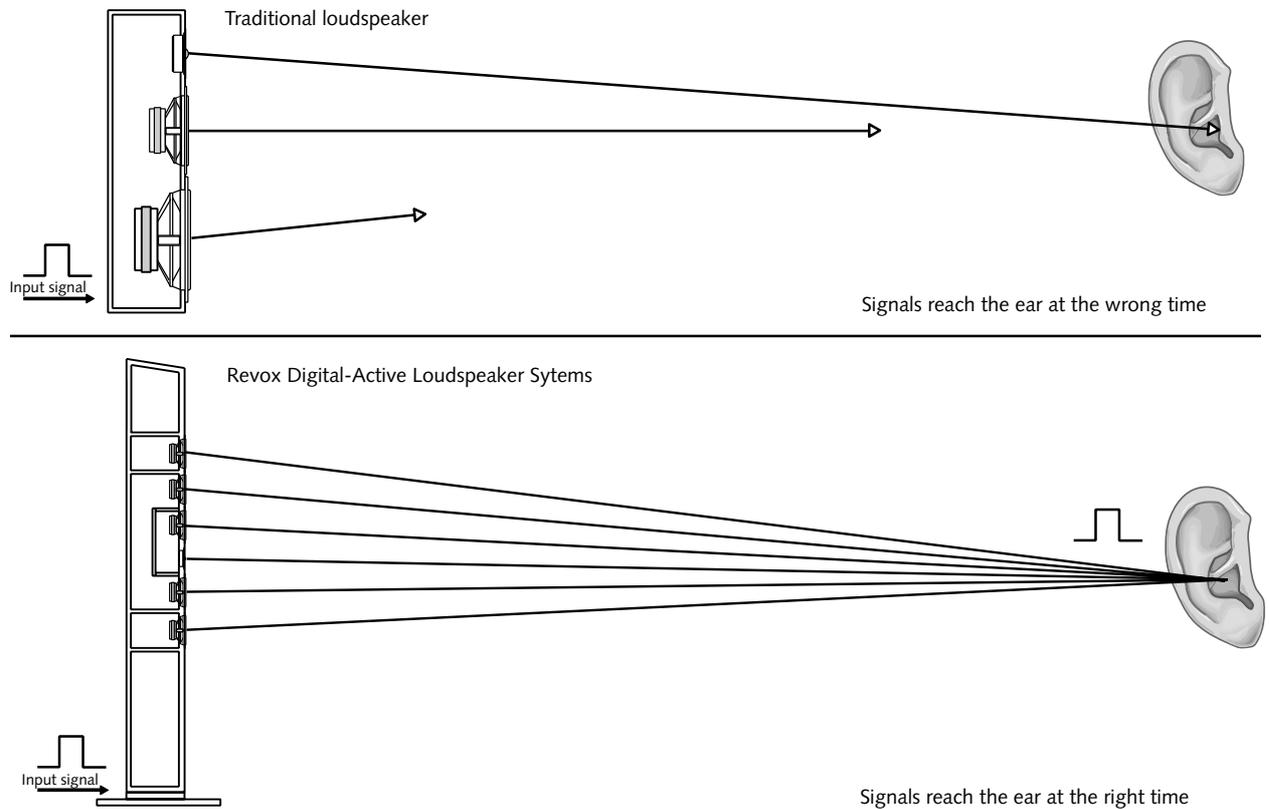
If you apply a pulse to such a voice coil, the diaphragm connected to this coil is deflected into one direction and afterwards gradually decays. This motion can be compared to the movement of a pendulum which has been given a push. However, the motion in the loudspeaker is damped by the magnet. Depending on the magnet's strength, the oscillation slowly or quickly ebbs away. Yet, this post-pulse oscillation is undesirable, because one pulse leads to a series of oscillations instead of only one, which, in turn, strongly influences the musical reproduction. It leads, for example, to booming bass, overemphasized bass, strange sound behavior of the medium and high frequencies.

Revox uses amplifiers with so-called negative impedance for all three ways. This patented method compensates for the impedance of the loudspeaker driver. To

balance the tolerances of the voice coils, which are caused by the tolerance of the wire, different winding, etc., each amplifier is specially adjusted to the single drivers when the loudspeaker is assembled.

The result of this exacting method is a precise control of the motions of the voice coil and consequently of the speaker's diaphragm. A pulse does no longer give rise to many decreasing vibrations but to one single oscillation.

The Revox Digital-Active Loudspeakersystems offer an unequalled, precise reproduction of music which is reflected by full bass, crisp mid-range, and brilliant treble.



Graphic to show the sound distribution at different speaker systems

3.5 *Why an extensive bracing of the cabinet ?*

The loudspeaker cabinet is very tall. Moreover, there are several vents for the speaker drivers on the front panel. As a result, transmission of vibrations from the drivers to the cabinet can hardly be prevented. However, to avoid such vibrations, stiffening ribs are optimally placed within the cabinet. By implementing this, admittedly, slightly extreme measure, we have succeeded in eliminating all vibrations.

3.6 *How works the digital volume and tone adjustment ?*

Digital servo components are used to set volume, tone, and balance. They are nearly ever-lasting as they do not contain any mechanical parts. Furthermore, they are maintenance-free and very precise. Moreover, the intelligent software monitors and limits the volume level when the system is switched on in order to avoid an unpleasant surprise. You conveniently operate the system by using an IR remote control.

3.7 *Why several loudspeaker drivers ?*

Due to the slim appearance and the pleasing design, it is not possible to use a large woofer with an accordingly large surface of the diaphragm. However, to achieve similar low-frequency foundation, the surface of the diaphragm is divided among several separate drivers. A big advantage of these relatively small woofers is that the smaller diaphragms have an increased dimensional stability. Additionally, special magnets reduce harmonic distortions, i.e. the non-linear distortion factor.

As the woofers cause air vibrations, a small enclosure is built into the loudspeaker cabinet in order to protect the mid-range driver from their influence. A specially built driver with extremely low harmonic distortion is used for the mid-range. The treble dome is equipped with a broadly radiating aluminum diaphragm. We have paid special attention to the weight of the coil and the diaphragm and reduced their weight as much as possible.

3.8 *Monitoring of electrical and thermal parameters*

At Revox, the quality of the loudspeakers is permanently monitored. Each Digital-Active Loudspeakersystem undergoes a 14 hours burn-in test before shipment. To ensure that the electrical requirements are fulfilled, our manufacturing department works with sophisticated computer measuring equipment. And even when in operation, the loudspeaker is constantly monitored. The electronic unit permanently measures the temperature of the heat sink. If, for some reason, the heat sink overheats, the electronic unit shuts down automatically, and a LED lights up. Moreover, the power fed to the loudspeakers is constantly monitored. If the load is too heavy for a driver, it is reduced.

4.0 *The digital sources, recommendations*

Exception CD-Player E 426

The E 426 CD-Player is a user-friendly top loader that allows you to change CDs easily and quickly. As it carries latest generation Hall motor drives, there are no mechanical influences while the discs are read, which makes the E 426 a lifelong companion. As far as signal processing is concerned, we strictly separated the digital from the analogue path by employing two transformers and two power supply circuits to eliminate possible mutual influencing. Top quality components ensure an optimum conditioning of the signals which are fed in their purest form to the outputs. Balanced and single-ended connectors act as interface to external equipment.

This is our top recommendation for the Digital-Active Loudspeakersystems.

Features:

- Top Loader
- Brand new Disc Drive VAM 1205 with hall motor
- High-quality D/A converter technology for outstanding sound and least possible distortion
- Separate power supplies for digital and analogue circuits
- Remote control for the whole Exception system
- Big LCD-Display
- Highest-quality operational amplifiers for the output stage
- Strictly separated path for analogue and digital signals
- 2 digital outputs (BNC, coaxial) for direct digital recording
- Symmetrical analogue outputs
- Additional cinch connectors for the analogue output signal
- Easy functions together with the amplifier E 450
- Big variety for programming
- Random play for all tracks on the CD
- Random play for the programmed tracks
- Autoplay, after inserting the CD and pushing the close button, the CD-player starts playing
- Controllable by IR control
- Sheet metal chassis
- Bicolor aluminum housing with an outstanding design

Elegance CD-Player S 22

The Elegance S 22 CD player excels due to its mesmerizing sound reproduction and high-quality drive. The digital output, which can be switched off, and the bitstream digital/ analogue converter make this CD player a true masterpiece which lets nothing get in the way of your perfect musical experience as it features only a few control elements, logical operating procedures, and simple programming.

- Slim form factor (430 x 265 x 70 mm)
- Vacuum fluorescent display
- Gold plated connectors
- Aluminum front panel and housing
- High-quality components
- Frequency range: 2 Hz - 20 kHz
- Coaxial digital output (switchable)
- Bitstream D/A-converter
- Highly efficient error correction
- Switchable phase
- Controllable by infrared control
- Available in silver and black

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