

Ayre KX-5 Twenty

PREAMPLIFIER / HAND BUILT IN BOULDER, COLORADO

About Ayre Acoustics

Ayre Acoustics, Inc. has been designing and building superior quality, award-winning audio and video equipment since 1993. Manufactured in Boulder, Colorado, each component is carefully hand-assembled on-site by a dedicated technician, using only state-of-the-art materials and assembly techniques. Quality control is assured by a rigorous testing procedure, as well as a thorough inspection process. Ayre's service and support is unsurpassed. Our environmentally responsible manufacturing processes include the careful selection of equally conscientious American suppliers. Enter the world of Ayre; enter a new dimension of musical meaning and cinematic enjoyment.



Arguably the most important component in your system, the Ayre KX-5 Twenty delivers all of the performance and flexibility you have come to expect from an Ayre design.

Following in the legendary footsteps of the Ayre KX-R preamplifier, the Ayre KX-5 Twenty lives up to the challenge with dynamics powered by Ayre's Diamond output stage and a finesse achieved by eliminating the traditional attenuating volume control with their 46 position Variable Gain Transimpedance (VGT) amplification circuit. Featuring six programmable inputs and Ayre's unique Equilock gain stage.



Variable Gain Transconductance

And that is what was so radical about the Ayre KX-R. Instead of using a fixed gain circuit, the gain of the circuit was variable (by changing its transconductance), hence the name VGT for "Variable Gain Transconductance".

There are many advantages of this approach:

- a) The signal is never attenuated, which would always lead to a loss in S/N ratio and also dynamics.*
- b) With a conventional preamplifier, the noise of the gain circuitry is fixed. This means that you only reach the maximum S/N ratio when the volume control is at the maximum. When you turn the volume control down, the output signal is reduced, but the noise of the circuitry remains the same -- therefore the S/N ratio becomes worse and worse as the volume is lowered. Since most preamps are used anywhere between -10 dB to -40 dB for an average listening level, this means that the S/N ratio in actual use will be 10 to 40 dB worse than on the spec sheet.*

In contrast, the S/N ratio of the VGT circuit is always at the maximum, regardless of the volume setting. So in real world usage, the S/N ratio is increased 10 to 40 dB higher than a typical preamp. This results in unparalleled resolution and retrieval of detail.



Improved Diamond Output stage

The Diamond output stage was first used in the original KX-5 and it was very good. When Ayre adapted it in the KX-R Twenty they learned more about the circuit and made several improvements to it over the original design in the KX-5. Those improvements have been added to the Diamond output stage in the KX-5 Twenty.

AyreLock

All power supply regulators, whether 3-pin ICs using massive amounts of feedback or the discrete zero-feedback designs Ayre have always used in their product ever since the V-3, twenty-one years ago, have at their heart a single series-pass active element (tube, FET, or BJT).

When the load (audio circuit) draws more current, the pass element decreases its resistance (turns on harder), to keep the voltage to the load constant.

For the AyreLock in the Twenty update, Ayre added a second circuit element (in this case a BJT) that also pulls down. So when the load (audio circuit) draw less current, the second transistor draws additional current to ground.

The analogy is like going from a single-ended output stage in a power amp to a push-pull complementary output stage.

This "locks" the output voltage of the regulator, regardless of any fluctuations in the load.

Servo controlled DC offset

Ayre have replaced the trimpots used in the original KX-5 and AX-5 with a much better sounding servo control. This servo not only improves the sound of the unit, but it also keeps the DC offset to less than 15 mv. It will even be able to compensate for incoming DC from a source component (up to a certain level).

The Twenty Edition: Two decades of musical innovation.

The Ayre KX-5 Twenty will capture you with its refined musicality and reset your expectations for a preamplifier.





KX-5 Twenty Features

- AyreLock analog power supply
- Ayre's Diamond output stage
- Variable Gain Transimpedance (VGT) volume circuit
- Ayre's exclusive Equilock circuit
- 46 step volume control, each of 1.5 dB
- Zero-feedback, fully-balanced discrete circuitry
- High-speed circuit board material
- Custom developed audio-grade resistors
- Ayre Conditioner power line RFI filter.

KX-5 Twenty Specifications

Maximum Input Level

8 V rms – unbalanced inputs / 16 V rms – balanced inputs

Gain

Gain Variable to match the required output level of the system without the need for attenuation

Input Impedance

1 MΩ unbalanced inputs / 2 MΩ balanced inputs (1 MΩ per phase)

XLR Input Polarity

Pin 1 = Ground / Pin 2 = Non-inverting (Positive) / Pin 3 = Inverting (Negative)

Frequency Response

DC - 250 kHz

Power Consumption

40 watts in operating mode / 60 watts in operating mode (volume control active)

Dimensions

17.25" W x 13.25" D x 3.75" H / (44cm x 34cm x 10cm)

Weight

23 pounds (10.5 kg)

