



Fine Audio Instruments



EC4R BALANCED LINE PREAMPLIFIER

Owner's Manual

WARNING: To reduce risk of fire or electric shock, do not expose this appliance to rain or moisture. Verify line voltage before use. Do not remove cover. No user serviceable parts inside. Refer servicing to qualified service personnel. The warranty is void if the product is tampered with by non authorised personnel. Use only authorised Electrocompaniet service station.

Welcome to the world of Electrocompaniet

We sincerely thank you for selecting an amplifier from Electrocompaniet. We hope you will enjoy years of listening pleasure and true high end musical performance from your audio system. Kindly read this owners manual to familiarise yourself with the set before operation.

The Electrocompaniet Story

Electrocompaniet was founded in 1973 in Oslo, Norway, to manufacture an amplifier designed by Per Abrahamsen. The design were based upon a new approach to transistor amplifier design developed by Dr. Matti Ojala and Jan Lohstro.

It had long been recognised that transistor amplifiers had a characteristic sound that many audiophiles and music lovers found unnatural.

Dr. Ojala and Mr. Lohstro analysed transistor amplifiers to determine what actually created the “transistor sound” in general transistorised designs. The results of their innovative design work were incorporated in the first Electrocompaniet design, the legendary 25 watt amplifier.

This product were the first commercial transistor amplifier to use this new design approach, and the amplifier was immediately recognised as dramatically more musical sounding than any other transistor amplifier. The same design philosophy, has been constantly updated by additional research and development. This philosophy form the basis of all the current Electrocompaniet Ampliwire and Preampliwire Dual Mono Balanced designs.

Electrocompaniet have always given extensive listening test of all it's designs the highest priority. Every product designed by our engineers must meet the varied and exacting standards of the listening panel, carefully selected to represent a cross section of musical taste and experience. Electrocompaniet designs go back and forth between the design laboratory and the listening panel until both engineers and listeners are completely satisfied, and ensured the that the design has met it's technical and sonic objectives.

All Electrocompaniet products are handmade by highly skilled technicians, and extensively tested for maximum performance and reliability.

Final adjustments are made only after an extended period of operation to insure the best possible performance under conditions similar to those of actual use.

Electrocompaniet Ampliwire and Preampliwire are sold in more than 25 countries , providing the ultimate listening pleasure to dedicated music lovers world-wide.

The design features of Preamplifier EC4R

After the Electrocompaniet 25 watt amplifier had established a new standard for transistor amplifiers, research was undertaken to find ways to make the amplifier even better, and to extend its highly musical sound quality to more powerful amplifier designs. The engineers at Electrocompaniet were not satisfied by only reducing the commonly recognised types of distortion to low levels. They recognised that distortion appears in many forms, and that distortion was still audible in listening tests even when conventional categories of distortion were at astonishingly low levels.

Traditionally, designers increased feedback to make a larger portion of the output signal control the amplifiers response. Our listening tests showed us that simply applying more feedback was not the answer. In fact, as one kind of distortion went down, other parameters would be adversely affected, leading to an overall degradation of sound quality. We knew that the other conventional design approach of eliminating feedback completely was not the answer either, because this would cause high distortion levels, and as a result would produce a “woolly” sound.

The answer to the dilemma was found in a novel approach to feedback theory. We developed a feedback concept that allowed local feedback to be applied around individual stages of the amplifier circuit. This approach allowed us to avoid the sonic disadvantages of overall feedback from output to input. The concept was further developed to reduce phase- and interphase distortion between stages of the amplifier as well. We were able to concentrate the loop feedback on the stages of the amplifier where it resulted in audible improvement.

Stability margins were also expanded because feedback no longer affected the frequency response. The use of this concept of individual gain blocks - complex in design but simple in function - allowed us to reduce distortion to minute values in all the products.

The various amplifier stages are divided into two separate sections or gain blocks. The input block is a transconductance amplifier without overall feedback. This avoids large output voltage being fed back to the input, and mixed with the minute input signal. The output block is a transresistance amplifier with parallel feedback. This is done to prevent higher frequencies than the feedback loop can handle, from entering the loop. An approach like this will prevent Transient Inter modulation Distortion (TIM) and Slewing Induced Distortion (SID), eliminating the need for an extremely wide bandwidth.

All stages work in Class A with an efficiency of less than 0,1%. The power supply of the EC-4 R consists of a 50 VA toroidal transformers, and 8.000 micro farad reservoir divided into eight 1000 micro farad capacitors, with separate regulator for each stage and channel.

Unpacking the Preamplifier:

Immediately upon receipt of the preamplifier, inspect the carton for possible damage during shipment. If the carton is visibly damaged, a claim must be filed with the carrier as soon as possible.

Unpack the unit carefully, and please do remember to save all packaging materials for future shipment. The carton and packaging have been designed to offer the safest possible protection when transporting your preamplifier.

The content of the carton is as follows:

1 pcs Electrocompaniet Preamplifier EC4R

1 pcs AC power cord

1 Owners Manual

Connecting the EC4R:

Connecting to mains

Check that the mains voltage printed on the rear panel of the preamplifier corresponds with the line voltage in the territory where you intend to use your preamplifier.

How to avoid damages

A good operating practice is to turn off all equipment before any connections or disconnections are made. Do not under any circumstances connect or disconnect equipment when power is turned on. If you insist on connecting or disconnecting while power is turned on, you should be aware that the design of the RCA plug generates a large transient when inserting the plug. This could damage both the speakers and the power amplifier.

The rear panel

The rear panel of the Preamplifier EC 4 R contains all input and output connectors. The printed rear panel clearly indicates the function of each connector.

Single RCA input operation

The single end RCA inputs will work with any line level source. Simply connect the RCA plugs from the source to one of the input RCA sockets.

Balanced RCA input operation.

The balanced mode can only be used if the CD player has a balanced output. Be sure the power amplifier is turned off. Remove the shorting plugs. Use 4 single (2 stereo) interconnect cables from the CD player to the preamplifier, connecting + and - outputs from the CD player to the + and - of the corresponding channel of the preamplifier. Make sure the + and - are not interchanged, as this will cause the system to operate out of phase, with very poor bass response as a result.

Balanced XLR input operation

The balanced mode can only be used if the source has a balanced output. In order to use the balanced XLR input, connect the XLR plugs from the source to the input XLR socket.

Connecting to the power amplifier:

Single-ended (normal) output and operation

Use the + RCA on right and left channel for connection to the power amplifier.

Balanced XLR output and operation

The balanced mode can only be used if the power amplifier has a balanced input.

Use an XLR interconnect with GND on pin 1, + on pin 2 and - on pin 3.

Balanced RCA output and operation

The balanced mode can only be used if the power amplifier has a balanced input. Be sure the power amplifier is turned off. Use 2 single (1 stereo) interconnect cables from the preamplifier to the power amplifier, connecting + and - outputs from the preamplifier to the

+ and - inputs of the corresponding channel on the power amplifier.

Make sure the + and - are not interchanged, as this will cause the system to operate out of phase, with very poor bass response as a result.

NEVER use shorting plugs on any output terminal i.e. Rec. out or main out.

How to avoid noise problems

The EC 4 R preamplifier contains circuitry that may be sensitive to magnetic fields. The unit should be placed well away from transformers etc. Care should also be taken in routing all signal cables. Do not run signal cables in parallel with speaker or AC cables (mains).

Keep cables as short as possible.

If the unit is placed on top of a power amplifier, leave at least 4" (10cm) of space between the two units.

Switches and controls

The power on/off switch is located in center of the face plate. This unit is equipped with separate record and listen switches. It is possible to listen (for instance) to a CD while recording another source - for instance a tuner. The two rotary switches are located on the left half of the faceplate. The right half of the faceplate contains the volume and balance controls.

Operating instructions:

How to turn on your system

You should always turn on your equipment in this order: Signal source devices (CD, tuner, etc) and preamplifier are turned on first. Allow 30 seconds of preheating before you turn on your power amplifier. When turning your system off, you should start by switching off your power amplifier, then the preamplifier, and finally your signal source devices

Warning:

The preamplifier will be warm.

Due to the high class A operating point used in the Electrocompaniet design, it is normal that the preamplifier feels warm. Proper ventilation will be needed, and the preamplifier should not be covered in. A good rule is to allow 1 - 2 inches of air sideways, and 2 - 3 inches above the preamplifier.

Service Policy:

When service is needed

Your dealer will have all relevant information about the service centers in your area, and will ensure that your unit is serviced without delay. It is our general policy to have your preamplifier returned to you within 5 working days. This is an average time, and could vary locally, depending on the work load at the service center.

If, for some reason, there are no service facilities available in your country, please ship the preamplifier to the following address:

ELECTROCOMPANIET A/S
BREIVIKVEIEN 7
N-4120 TAU, NORWAY
FAX +47 51 74 10 10
E-mai : elcomp@electrocompaniet.no

You are responsible for all shipping charges, insurance, re-importation to your country, and duty arrangements. When shipping a product to the factory for service, always include the following:

- 1) Sales slip or other proof of purchase if repair is claimed under warranty.
- 2) Proforma invoice with value of the goods, stating "returned for repair".
- 3) An accompanying letter describing faults, symptoms, or problems with the preamplifier.
- 4) Always ship the preamplifier in its original carton and packaging material to prevent damage in transit.

Electrocompaniet will not accept responsibility for any damage caused in transit, no matter how ever caused.

If you require further information concerning the preamplifier operation, or if you have any questions related to service, please do not hesitate to contact your dealer or national Electrocompaniet distributor.

Technical Specifications EC4R:

The following technical data were measured on randomised test objects and are typical data. All measurements are made with the following equipment:

Distortion analyser:	Tektronix AA501
Oscilloscope:	Tektronix 468
Oscillator:	Tektronix SG505
Frequency counter:	Rascal 9838
Phase meter:	Hewlett Packard 3575A

Preamplifier section

Single ended operation (gain)	0 dB
Balanced operation (gain)	6 dB
Input impedance	50 kOhm
THD single ended (1.5 V output)	< 0.003 %
THD balanced (1.5 V output)	< 0.0015 %
Max. input	> 10 V RMS
Channel separation (1 V output, 1 kHz)	> 90 dB
Output impedance	100 Ohm
Max. output Single ended	8 V RMS
Max output Balanced	16 V RMS

Output noise 400 Hz - 30 kHz input shorted

Single ended :	6 μ V
Balanced :	11 μ V

Power consumption (no load or signal) 15 W

Dimensions

Width	483 mm / 19 inches
Depth	325 mm / 12.8 inches (incl. handles)
Height	115 mm / 4.5 inches
Weight	8 kg. / 17.6 lbs.