



PC90

User Manual



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Copyright Information.

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Thank You.

By buying PC90, you have joined the ranks of the thousands of professional engineers, installers and musicians who choose LA Audio. We hope your PC90 brings you many years of enjoyable polarity checking!

This manual should get you up to speed with the PC90's capabilities, controls and specifications. It also details safety precautions that must be taken for the safe use of this equipment. Please take the time to read this information carefully and store this manual for future reference.

Important Safety Information.

COVERS

DO NOT remove the covers. Refer servicing to qualified personnel only.

MOISTURE

DO NOT expose the unit to rain or moisture. If your PC90 should become so exposed, remove the unit from the source of moisture and allow to dry thoroughly before attempting use again.

HEAT

ALWAYS site your PC90 away from sources of heat including direct sunlight and ensure adequate ventilation around the unit.

REGULATORY COMPLIANCE

This product complies with both the EMC Directive (89/336/EEC) and the Low Voltage Directive (73/23/EEC) as issued by the Commission of the European Community. Compliance with these directives imply conformity with the following European standards:

- EN60065 Product safety
- EN55103-1 Electromagnetic Interference (Emission)
- EN55103-2 Electromagnetic Susceptibility (Immunity)

Introduction.

The PC90 is an advanced measuring system which allows you to check the polarity of any electronic audio signal path. It's an ideal tool for numerous applications and should take pride of place in your toolbox.

For a system to perform correctly, the polarity of the signals must be maintained from input to output. Unintentional polarity reversal needs to be avoided, and this is what the PC90 checks for.

The system is in two parts, an emitter and receiver, which can be placed at any point in an audio system. The emitter produces a 1Hz pulse, which can be sent acoustically or electronically to the receiver, which determines polarity.

This manual is your guide to exactly how the PC90 functions, and how you should look after it to ensure its continued faithful service. Please have a good read before use.

Getting Started.

INSPECTION & UNPACKING

The PC90 is carefully packed at the factory in a carton designed to withstand transit handling, however, if transit damage is evident, **DO NOT** discard any of the packaging and notify the carrier immediately, it is they who are responsible for any claims.

OPERATING ENVIRONMENT

The units are designed to operate between 0 and 50 deg C (32-122 F) and in an atmosphere of relative humidity up to 80%.

POWER REQUIREMENTS

Each unit is powered by a 9V PP3 battery, which is fitted by removing the battery cover and attaching the battery to the connector provided.

Operating Instructions.

During operation, the emitter produces a series of special pulses which are fed into the system by using either the built-in speaker or by connecting the XLR output to a line or microphone input. The line output level can be adjusted using the front panel control knob, however the speaker level is fixed.

Once the emitter's signal has been fed through the system, the receiver will tell you whether it has arrived in or out of phase by its green and red LEDs. Like the emitter, the receiver can accept audio signals in one of three ways:

- Selecting INT uses the internal microphone.
- Selecting EXT allows an external microphone to be used. Remember, though, that the unit cannot provide phantom power for connected mics.
- Selecting LINE allows a line level signal to be used.

When using XLR connections, a selector switch on both the emitter and receiver allows the system to adapt for different wiring conventions – either pin 2 hot or pin 3 hot. Make sure that both of these are set to the same state, and that this matches the cables in use.

Application Notes.

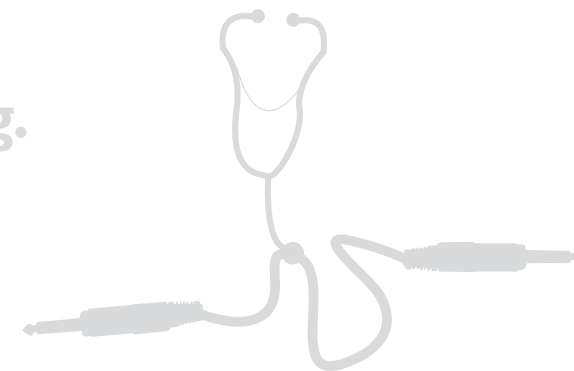
There are various applications for the PC90. Below are a few suggestions about how to get the best from your PC90.

- Feed the signal from the emitter into a PA system and place the receiver in front of each loudspeaker in turn to ensure that the system is in-phase.
- For a multi-mic application, connect the receiver to a mixing console output and feed each microphone with the generated pulse. The receiver may then be used to check that all the mics are in phase, (if out of phase, cancellation effects may occur where mics are close together).
- The system may be used for checking phase transmission on tape recorders, (be prepared for some surprises!). This test can be made by recording the generated signal onto tape and connecting the receiver to the machine's output. This is really useful in the recording studio, when using effects off tape which are combined and for checking tape machine wiring.
- The system may also be used to check telephone lines, satellite links etc.

Keep in mind that **some crossover networks and speaker systems deliberately place certain speakers out of phase for correct operation.** Check the technical specifications of the system before making any polarity adjustments.

Cable Testing.

The PC90 is designed to be a polarity tester for electronic audio systems, **not specifically a cable tester.**



If a false reading is found in a system and a cable fault is suspected then ideally a dedicated cable tester should be used to trace the fault. However, if you want to check an individual XLR cable and the PC90 is what you have at hand:

- Set the 'Hot Pin' switch on both units to Pin 2 and select 'LINE' as the input on the Receiver.

then,

- Set the 'Hot Pin' switch on both units to Pin 3.

If the cable is correct the green 'IN' LED will flash in both cases, if the cable is reversed it will show nothing, thus indicating a fault condition.

Note: The Emitter's level control should be set to about 3 o'clock for this test.

Specifications.

GENERATOR

Pulse rate	1Hz
Frequency spectrum, electrical	1Hz to 20KHz
Frequency spectrum, acoustic	200Hz to 5KHz
Output level, electrical	0 to 1V (Acoustic level is fixed)
Output load impedance	>1K Ω
Output source impedance	1K Ω
Power	9V PP3 battery (= approx 50 hours)
Power drain	10mA

RECEIVER

Frequency spectrum, electrical	1Hz to 20KHz
Frequency spectrum, acoustic	10Hz to 1KHz
Input impedance (Mic)	1K Ω
Input impedance (Line)	10K Ω
Input level (Mic)	10mV - 1V
Input level (Line)	0.5V to 50V
Output level	0V to 1V
Power	9V PP3 battery (= approx 50 hours)
Power drain	10mA

PHYSICAL CHARACTERISTICS (each box)

Dimensions	140mm W x 80mm D x 50mm H
Weight	0.25 Kg
Shipping weight	0.65 Kg
Operating temperature	0 - 50 deg C
Storage temperature	-30 - +75 deg C

Warranty.

Your LA Audio PC90 has been manufactured to a high standard using quality components. If correctly installed and operated the unit should give years of problem free operation.

However in the event of a defect in material or workmanship causing failure of the unit within 1 year of the date of original purchase we will agree to repair, or at our discretion replace, any defective item without charge for labour or parts. To receive service under this warranty it is necessary to return the unit to an LA Audio authorised service centre or to the factory with a dated receipt as proof of purchase. After repair the unit will be returned to you free of charge.

Limitations:

This warranty does not cover damage resulting from accident or misuse. The warranty is void unless repairs are carried out by an authorised service centre. The warranty is void if the unit has been modified other than at the manufacturers instruction. The warranty does not cover components which have a limited life, and which are expected to be periodically replaced for optimal performance. We do not warrant that the unit shall operate in any way other than as described in this manual.

