

2 THE CLIO SYSTEM

Depending on the hardware options that have been purchased, the CLIO system consists of the following components:

- The HR-2000 PC board
- The MIC-01 or MIC-02 (also **Lite**) microphones
- The PRE-01 microphone preamplifier
- The ClioQC Amplifier & Switch Box

In the next few pages we will describe each component and give its respective technical specifications.

NOTE: Audiomatica reserves the right to modify the following specifications without notice.

2.1 THE HR-2000 PC BOARD

The HR-2000 board will fit in any IBM (or IBM-compatible) Personal Computer and will perform the A/D and D/A interfacing with the outside world. The board requires a standard 8-bit half-size ISA slot. The audio connections are made via four RCA plugs; the lower two are outputs, and the upper two are inputs (see Fig. 2.1). Two adaptor cables with alligator clips are supplied with the board (not in the **Lite** version), and can be used to connect to speaker or component terminals when performing measurements.

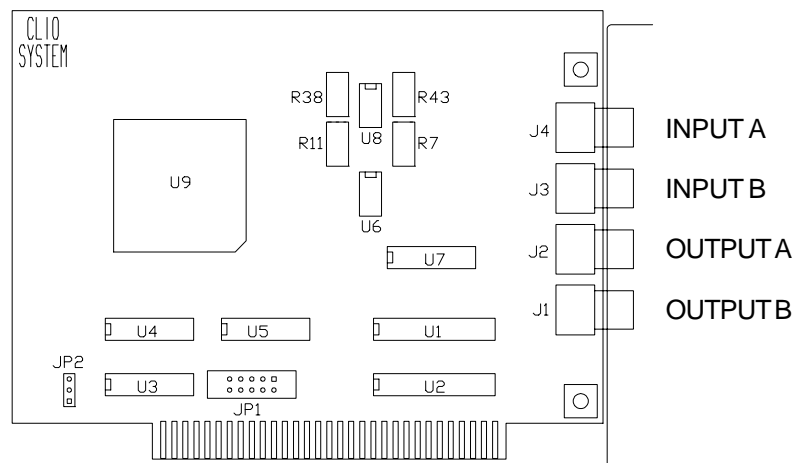


FIGURE 2.1 – The CLIO PC board

2.1.1 TECHNICAL SPECIFICATIONS

GENERATOR

Type:	Two-channel 16-bit sigma-delta D/A converter
Frequency range:	1 Hz–22 kHz (+0/–1 dB)
Frequency accuracy:	better than 0.01%
Frequency resolution:	0.01 Hz
Output impedance:	100 ohms
Max. output level (sine):	12 dBu (3.1 Vrms)
Attenuation:	+12 to -64 dBu in 0.1 dB step + mute
THD+Noise (sine):	0.015%

ANALYZER

Type: Two channel 16-bit sigma-delta A/D converter
Input range: +30 to -40 dBV
Input impedance: 64 kohm
Phantom: 8.2 V (5.6 kohm mic input impedance)

MISCELLANEOUS

Sampling frequencies: 51.2 kHz, 25.6 kHz, 12.8 kHz, 6.4 kHz, 3.2 kHz and 1.6 kHz
Card type: 14 cm, 8-bit PC slot card
Card connections: Four RCA plugs
Adaptor cables to speaker terminals (not supplied in Lite version)

2.2 THE MIC-01 MICROPHONE

The MIC-01 microphone is an electret measuring microphone that is particularly well suited to be used in conjunction with the other components of the CLIO system. It is furnished with its own stand adaptor and a calibration chart, all fitted in an elegant case. Its long and thin shape renders it ideal for anechoic measurements. Because its frequency response is very flat over the entire audio band, no particular correction is needed for professional-quality measurements.

2.2.1 THE MIC-02 MICROPHONE

The MIC-02 microphone is functionally identical to MIC-01. It differs only in the fact that its length is 12 cm instead 25 cm. The MIC-02 is more practical to handle and to work with, and is ideal for measurements in a reverberant environment.

2.2.2 TECHNICAL SPECIFICATIONS

MIC-01

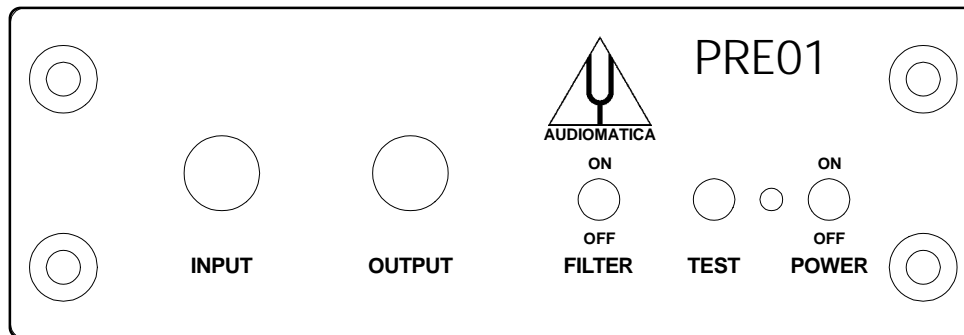
Type:	Condenser electret
Accuracy:	± 1 dB, 20 Hz to 10 kHz ± 2 dB, 10 kHz to 20 kHz (direct field)
Maximum level:	130 dB SPL
Dimensions:	8 mm diameter, 25 cm long
Accessories:	wooden case, 2.7 m cable, stand adaptor

MIC-02 and Lite

Same as MIC-01, but 12 cm long. In the **Lite** version the accessories are not supplied.

2.3 THE PRE-01 MICROPHONE PREAMPLIFIER

The microphone preamplifier PRE-01 has been designed to match Audiomatica's microphones MIC-01 and MIC-02. It is particularly useful when the microphone has to be operated far from the analyzer or when weighted measurements are needed. PRE-01 powers the microphone connected to its input with an 8.2V phantom supply and adds a selectable weighting filter (A or B or C); also available there is a 20 dB gain stage. The unit is operated with two standard 9V batteries or with an external DC power supply. PRE-01 substitutes the 3381/A preamplifier.



PRE-01 front panel.

2.3.1 TECHNICAL SPECIFICATION

Frequency response:	7Hz÷110kHz (-3dB)
Weighting filter:	A, B, C (IEC 651 - TYPE I)
Phantom power supply:	8.2V (5600 Ohm)
Gain:	0 & 20dB (INTERNAL SETTINGS)
Input impedance:	5600 Ohm
Output impedance:	100 Ohm
Maximum output voltage (@1kHz):	25 Vpp
THD (@1kHz):	0.01%
Input noise (@20dB gain):	7uV LIN, 5.3uV A
Drive capability:	±7mA
Batteries duration:	>24h (alkaline cells)
Size:	12.5x19x5cm
Weight:	900g

2.3.2 USE OF THE PREAMPLIFIER

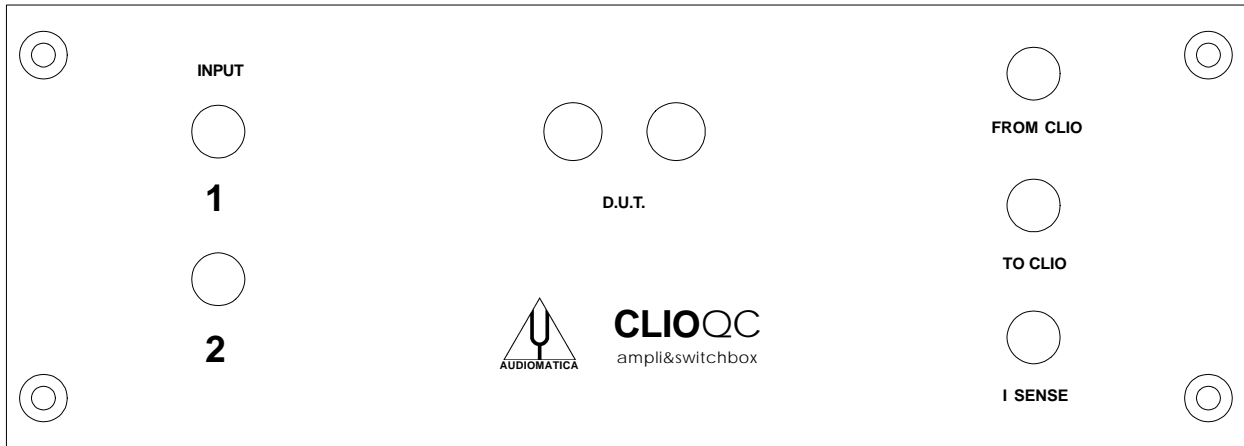
The MIC-01 or MIC-02 microphone cable has to be connected to the preamplifier input while the preamplifier output has to be connected to the analyzer input. The unit is switched on with the POWER switch, while the TEST push-button controls the state of the unit; when pressing it, if the led light is on then the unit operates correctly, otherwise not: either the batteries are low or the external power supply is not connected. The FILTER switch inserts the weighting filter. To choose the desired weighting filter type and to set the amplifier gain you have to modify the internal settings as described later.

NOTE: if the 20 dB gain stage is inserted the overall sensitivity (microphone + pre) is 10 times higher. For example if your microphone has a sensitivity of 17.1 mV/Pa and you preamplify it of 20 dB then you get a sensitivity of 171 mV/Pa.

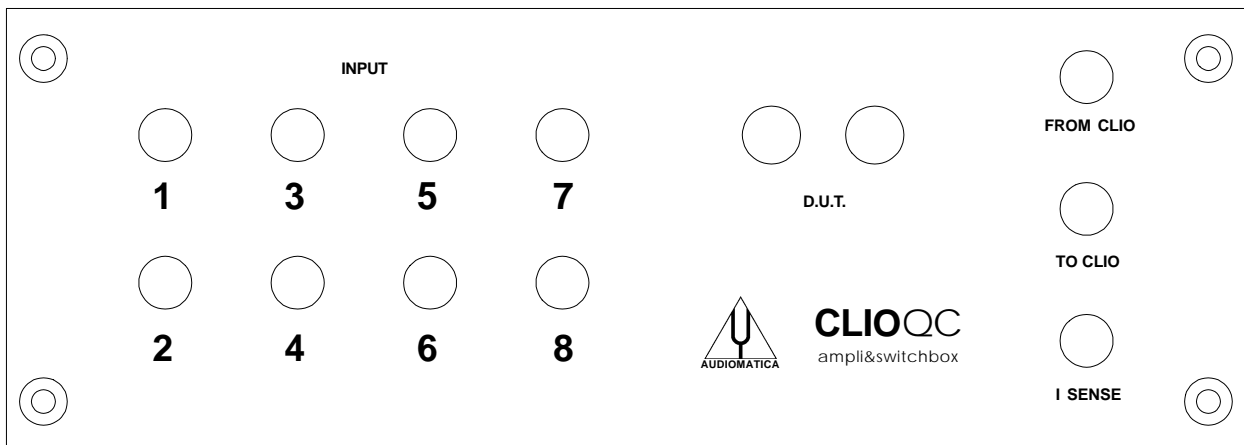
2.4 THE CLIOQC AMPLIFIER & SWITCH BOX

The CLIOQC amplifier and switch box is of invaluable help when configuring an automatic or manual quality control setup and even in everyday laboratory use.

Its main feature is the possibility of **internal switching** that permits the measurement of the impedance and frequency response of the loudspeaker connected to its output sockets without changing the loudspeaker wiring; it is also possible to choose one among several input for the response measurements; the internal switching is under software control via the parallel port of the PC. The two models (Model 2 and 3) differ for the number of available inputs: 2 or 8.

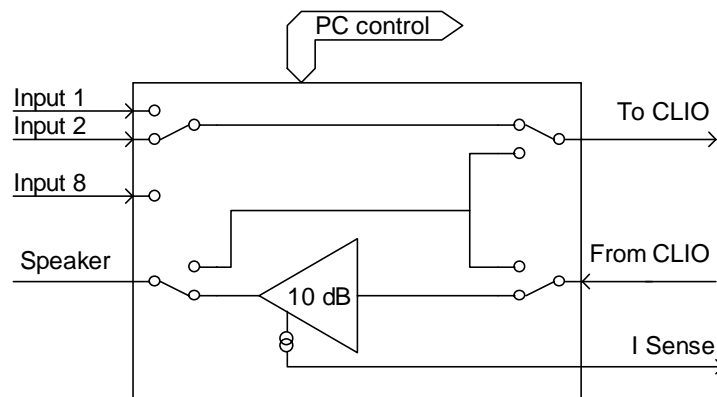


Model 2 front panel

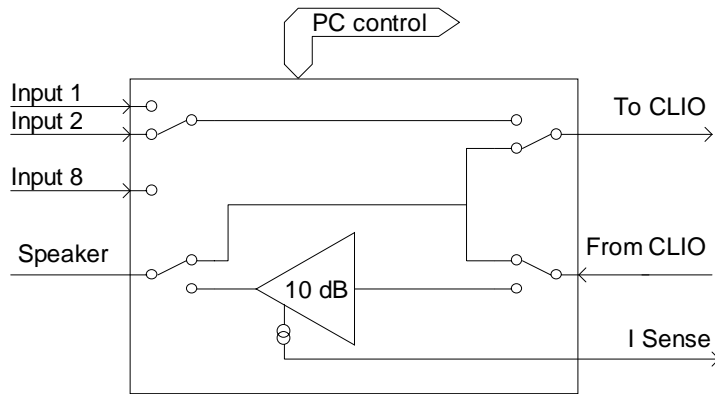


Model 3 front panel

Follows its internal block diagram.



Internal connections for frequency response measurements



Internal connections for impedance measurements

2.4.1 TECHNICAL SPECIFICATIONS

Inputs:	Two (Model 2) or eight (Model 3) line/microphone inputs with selectable phantom power supply (8.2V)
Functions:	TTL controlled internal switches for impedance measurements
Output power:	10W with current sensing
THD (1 kHz):	0.004 %
Dimensions (cm):	23x9x23
Weight:	2.7 kg
AC:	110-120/220-240