

AMPLIFIED NOISE LIMITER AND CONTROLLER LRF-04

Control Amplified Noise based on Interior or Exterior Sound Level requirements

Control Noise from:

- Discos, Theme parks, Exercise studios, Sports stadia, Outdoor concerts, Street fairs, Amplified announcements, Auto dealerships w/ pages

Uses

- Noise between dwelling units
- Noise control for the community

Concept

- Control and limit immission (receiver) noise based on the measurement of SPL near the source
- Simple measurement of octave band frequency response (transfer function) between source and receiver

Flexible

- Control by emission Sound Pressure Level or reception SPL (insulation)

- 40 dB correction range (attenuation)
- Adaptable to almost any kind of regulation

Features

- It registers many acoustical parameters like L_{Aeq} , $L_{Aeq1'max}$, $L_{Aeq1'min}$, L_{Fmax} , and percentiles
- It registers all the occurred incidents: Disconnection from the power and all other tampering
- It can be completely sealed.
- Secure. Cannot be tampered with unnoticed.
- Internal Battery
- Data retrieval by LCD Screen, printer, serial connection with PC and modem.
- Internal and continuous self-verification system
- Flexible predictive and active control algorithms
- Massive Data Storage: for periods longer than 1 month



The **LRF-04** AMPLIFIED NOISE LIMITER AND CONTROLLER measures, displays, records and controls the sound pressure level at the location where it is installed. As a result, it also controls the sound pressure level *at any other* receiver location. Hence, if there is a noise limit at some distance from the noise source, using the **LRF-04** in the sound reproduction chain, the limit can be met.

The heart of the **LRF-04** is a sophisticated sensor, an octave band real time analyser, a sophisticated active control system, and a large storage device, designed on the basis of the latest technology in the field of sound measurement developed by CESVA.

The **LRF-04** is inserted into the sound amplification chain, usually between the mixing console and the crossover network, if applicable. Thus the **LRF-04** can control the output.

The **LRF-04** works by measuring the sound levels in the establishment producing the noise. It then compares the measured noise with direct limits in the establishment or with exterior limits.

The sound pressure levels in or near the space near the establishment are calculated based on the levels measured by the sensor in octave bands (from the bass at 31.5 Hz to the treble at 8 kHz) and on the existing attenuation in octave bands between the establishment and the nearby space. The space can be an adjacent

dwelling unit, a neighbours lot line, or any other location. The attenuation in octave bands can be measured using common instrumentation.

This spectral measurement function allows the user to obtain the maximum sound pressure level in the establishment without exceeding the permitted sound level limit in nearby areas. If the limits are exceeded by 40 dB or less, the **LRF-04** automatically puts attenuation in the circuit to maintain the allowable limits. If the limits are exceeded by more than 40 dB, the **LRF-04** places 60 dB attenuation automatically in the chain for a time interval that can be chosen.

The large dynamic attenuation lets the **LRF-04** correct the output signal without restrictive attenuations. Importantly, the **LRF-04** is equipped with different response algorithms to allow a slow to a fast attenuation. The former is more natural attenuation, where the listeners will not easily notice the correction, but it will take some time. The latter is faster, assuring almost instantaneous compliance, but very noticeable by the listeners.

The **LRF-04** also has a recording function that allows the user to store information concerning measured sound levels in the establishment and concerning incidents that occur (tampering with the equipment) during a period of at least one month. The interval of information storage (from 2 min. to 1 h. in 1-min. steps) is user selectable.

The information for each event (concert, operating hours, etc.) is also stored. This allows evidence of the generated sound levels by the activity only. The stored information can be retrieved by looking on the **LRF-04** LCD screen, by a connected printer, or by a PC via a serial port or modem.

The **LRF-04** is equipped to detect and record possible tampering with both the measurement equipment and the musical chain. In addition, it has an internal battery that allows it to continue to work when disconnected from the mains or in the event of a power failure. Should someone pull the plug, the **LRF-04** automatically attenuates the signal by 60 dB. The battery lasts for one day. Before the battery runs out, the **LRF-**

04 records the day and time, storing a record of the last 10 occasions on which this occurred. When the battery has run out, the **LRF-04** turns off automatically and attenuates 60 dB until the next time it is connected to the mains. The stored information is not lost. When the unit is connected to the mains once more, the **LRF-04** continues to function as normal.

A luminous external display can be connected to the **LRF-04**, allowing you to observe in real time the measured sound pressure level and the attenuation level from anywhere in the establishment.

Technical Specifications

AMPLIFIED NOISE LIMITER AND CONTROLLER LRF-04

INPUTS AND OUTPUTS

Audio Inputs and Outputs

Asymmetrical E/S Connectors (non-balanced): RCA

Symmetrical E/S Connectors (balanced): Input: XLR female
Output: XLR male

Input impedance: 100 k Ω

Output impedance: 100 Ω

Minimum output charge: 47 k Ω

Total harmonic distortion: < 80 dB

Absolute max. input level: ± 18 V

Maximum input level without distortion: ± 14 V

Frequency response (± 0.5 dB): 20 to 20,000 Hz

Typical noise (20 – 20,000 Hz): < 200 μ V

DL-3E external display connection output

DIN socket with 6 contacts (female)

Modem connection output

DB-9 plug (male)

RS-232 serial connection output

DB-9 socket (female)

Parallel printer output

DB-25 socket (female)

ATTENUATOR

Range of attenuation: 0 - 40 dB

Penalisation attenuation: 60 dB

Typical attenuation error: 0 B

Max. atten. error (0-40 dB): 1 dB

SENSOR

Measurement range: 60 – 120 dB

Frequency range: 20 – 20,000 Hz

OCTAVE FILTERS

IEC-61260 (1995) Class type 1
ANSI S1.11:86 Class type 1

ISO-266 (1975) Recommended
Center Frequencies

Octave bands mid-frequencies from 31,5 Hz to 8 kHz. This incorporates the range used in the description of sound insulation of buildings.

DISPLAY

LCD Display

Backlit with 20 x 4 characters

External Display (Optional)

DL-3E external LEDs display: indicates, in real time, the A-wtd sound pressure level and the LRF-04 attenuation in dB. The display updates every 2 seconds.

DIMENSIONS and WEIGHT

440x224x95 mm
2 units 19" rack
9 kg

MAINS FEED

110 V – 50-60 Hz

BATTERY FEED

With automatic recharge
Minimum battery duration: 24 h

MAXIMUM CONSUMPTION

25 W

STORAGE CAPACITY (It can be increased)

22 days (TLeq = 2 min)
34 days (TLeq = 3 min)
56 days (TLeq = 5 min)
22 months (TLeq = 1 h)

DICESVA S. L. reserves the right to change specifications and accessories without notice.

ACCESSORIES

SUPPLIED	OPTIONAL			
Sensor LXM-8 Cable CNOMX9	CB-5	Sound Calibrator	SFTL04	Software for PC
	DL-3E	External Display	ALIC-1	Pincers to seal
	CNOMX9	Connection Cable sensor-limiter 9 m	PLOM-1	Lead seal of $\varnothing 9$ mm (1kg)
	CN-201	RS232 Serial cable to connect to a PC	ALAMB-1	wire to seal (50 m roll)