



Main Characteristics

- **Frequency-Filter Sound Pressure Level limiter based on the measurement of SPL**
- **It does not cut out the music. With the ENOS (Extraneous Noise Override System) option the reproduction of music in venues such as bars, pubs and cafés is possible.**
- **Control by emission Sound Pressure Level or reception SPL (insulation)**
- **40 dB correction range (attenuation)**
- **Registers acoustical parameters such as LAeq, LAeq1'max, LAeq1'min, LFmax, and percentiles (interval and sessions)**
- **Registers all incidents: Disconnection from the mains, sensor tampering**
- **Can be completely sealed**
- **Adaptable to any kind of regulation**
- **Internal Battery**
- **Data retrieval by Screen, printer, serial connection with PC and modem**
- **Internal continuous self-verification system**
- **Several predictive control algorithms**
- **Massive Data Storage for periods longer than 1 month**

The **LRF-04** frequency sound level recorder-limiter measures, displays, records and controls the sound pressure level in the establishment where it is installed. The **LRF-04** is inserted into the reproduction chain, between the mixing desk and the crossover, intervening in the entire sound chain.

The **LRF-04** automatically corrects excesses in the musical signal level of up to 40 dB. If this 40 dB is exceeded, the **LRF-04** penalises with a 60 dB attenuation during a programmable time interval. The wide dynamic attenuation range provides the user of the sound system with considerable room for manoeuvre in which the **LRF-04** corrects the signal level excesses without restrictive attenuations. The **LRF-04** is equipped with different predictive reply algorithms for this function, ranging from the most stable, based on the Leq10s parameter (recommended) to the most restrictive, based on Leq125 ms.

The **LRF-04** includes the **ENOS** (Extraneous Noise Override System) option, specially designed for music reproduction in venues with a high level of ambient noise: bars, pubs etc. It does not cut out the music.

The **LRF-04** functions according to the sound levels measured in the establishment by means of a sensor designed on the basis of the latest technology developed by **CESVA** in the field of sound measurement and/or according to the sound pressure levels in the dwelling next door to the establishment, calculated on the basis of the levels measured by the sensor by octave bands (centred on 31.5 Hz, 63 Hz, 125 Hz, 250 Hz, 500 Hz, 1 kHz, 2 kHz, 4 kHz and 8 kHz) and to the existing insulation levels by octave bands between the establishment and the dwelling. This spectral function allows the user to obtain the maximum sound pressure level in the establishment without exceeding the permitted sound level limit in adjacent buildings.

The **LRF-04** is also equipped with a recording function that allows the user to store information concerning sound levels measured in the establishment, and concerning incidents that occur, (tampering with the equipment), during a minimum period of one month, (Leq time over 2 minutes). The **LRF-04** allows you to programme the periodicity of information storage, (from 2 min. to 1 h. in 1-min. steps). The information for each session is also stored, allowing you to demonstrate the sound levels generated by your activity to the authorities. The information stored can be retrieved either directly from the **LRF-04**, by displaying it on the LCD screen, or by means of a printer connected to the **LRF-04** parallel port. The information can also be transferred to a PC via a serial port or modem.

The **LRF-04** is equipped with an internal battery that allows it to continue working when disconnected from the mains or in the event of a power cut. When the **LRF-04** is working from a battery, it attenuates 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 has occurred. When the battery runs out, the **LRF-04** turns off automatically and attenuates 60 dB until the next time it is connected to the mains. The information stored 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 from anywhere in the establishment and in real time the sound pressure level measured along with the attenuation level applied by the **LRF-04**.

The **LRF-04** is equipped with an internal continuous self-verification system that allows you to detect and record possible tampering, both with the measurement equipment and the musical chain.



Technical Specifications

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 (THD):
< 80 dB

Absolute maximum 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):
Balanced: 180 μ V
Non-Balanced: 130 μ V

DL-3E external display connection output

XLR with 3 contacts (male)

Modem connection output

DB-9 plug (male)

RS-232 serial connection output

DB-9 socket (female)

Connection with parallel printer output

DB-25 socket (female)

Attenuator

Range of attenuation:
0 – 40 dB

Penalisation attenuation:
60 dB

Typical attenuation error:
0 dB

Maximum attenuation error (0 - 40 dB):
1 dB

SUPPLIED ACCESSORIES

LXM-8 Sensor
CNOMX9 Cable sensor-limiter
SFTL04 Software for PC

Sensor

Measurement range:
60 – 120 dB

Frequency range:
20 - 20.000 Hz

Octave Filters

IEC-61260 (1995) standardised type 1 octave filters.

Central frequencies according to ISO-266 (1975) recommendation:
The frequency margin comprises the octave bands centred in the frequencies: 31'5, 61,125, 250, 500, 1000, 2000 and 4000,8000 Hz and those cover the ones which are recommended for the description of sound insulation of buildings (preferential frequencies: 125, 250, 500, 1000, 2000, 4000 Hz).

Display

LCD Display

Backlit with 20 x 4 characters

External Display (optional)

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

Dimensions and weight

440x 226x 95 mm
2 units. 19" rack

9 kg

Mains feed

220V — 50-60 Hz

Battery feed

With automatic recharge

Minimum battery duration: 24h

Maximum consumption

25 W

Storage capacity (it can be increased)

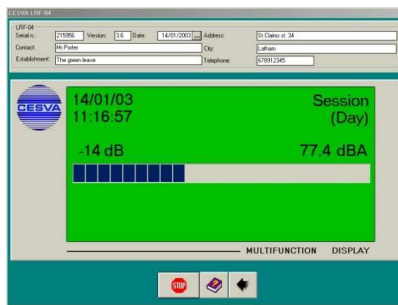
10 days (TLeq = 2 min)
34 days (TLeq = 7 min)
48 days (TLeq = 10 min)
9 months (TLeq = 1 h)

OPTIONAL ACCESSORIES

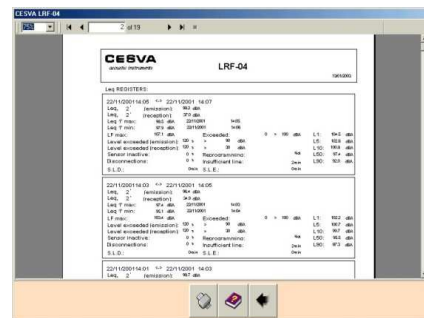
CB004 Class 2 acoustic calibrator
DL-3E External Display
ALIC-1 Sealing pincers
PLOM-1 Lead seal of $\varnothing 9$ mm (1kg)
ALAMB-1 Sealing wire (50 m roll)
BT245 Bluetooth™ device for the Limiter
BT002 Bluetooth™ device for the PC
DL100 Giant External Display

The **LRF-04** is supplied with the software application that allows you to:

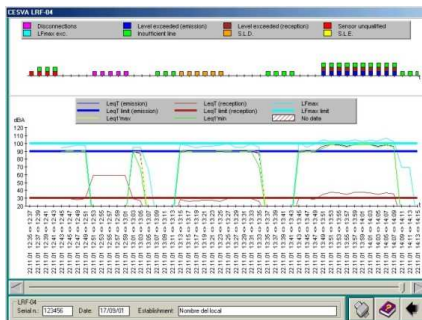
- Display data registered by the LRF-04.
- Generate reports of these data.
- Study in detail all the sound levels and incidences.
- Acquire data via MODEM.
- Display, in real time, the data measured by the LRF-04.
- Programme the LRF-04
- Erase the LRF-04 memory.



Real time data acquisition by modem



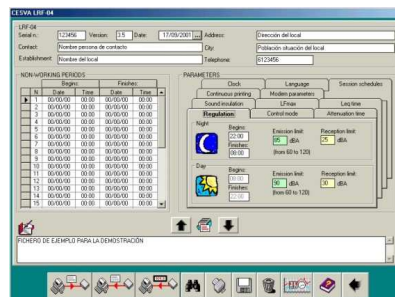
Generation of reports



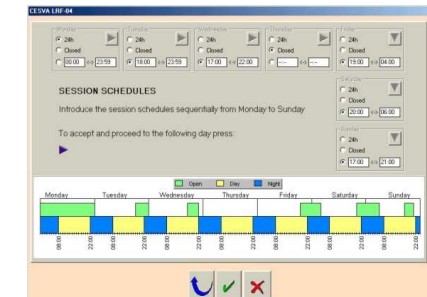
Graphic display of data (sound levels and incidences)

| REGISTRO | Fecha | Hora | LeqT (emission) | LeqT (reception) | LeqT (total) | Emisiones | Control escape | LeqT |
|------------|-------|------------|-----------------|------------------|--------------|-----------|----------------|------|
| 14.01.2003 | 11:26 | 14.01.2003 | 11:26 | UNLD | 75 | 0 | UNLD | 96.4 |
| 14.01.2003 | 11:24 | 14.01.2003 | 11:24 | UNLD | 75 | 0 | UNLD | 96.5 |
| 14.01.2003 | 11:22 | 14.01.2003 | 11:22 | UNLD | 75 | 0 | UNLD | 97.0 |
| 14.01.2003 | 11:20 | 14.01.2003 | 11:20 | UNLD | 75 | 0 | UNLD | 96.8 |
| 14.01.2003 | 11:18 | 14.01.2003 | 11:18 | UNLD | 75 | 0 | UNLD | 96.1 |

Numeric display of register data (LeqT and sessions registers)



Programming the LRF-04



Session schedule (when the establishment has an event)

The characteristics, technical specifications and accessories may vary without prior notice