sound
measurement

CESVA

Instruments for acoustics

www.cesva.com

SC310

CESVA "Serving acoustics for over 40 years"

The company was founded in 1969 in Barcelona. It specialises in the research, development, manufacture and sale of instruments for the measurement and control of noise and vibration. Our business is 100% Spanish owned and is the only Spanish manufacturer of sound level meters and condenser microphones. Our products are designed and manufactured on our own premises under our own patents.

CESVA "Powerful, user-friendly instruments"

Our mission is to help our customers measure and control both noise and vibration. We do this by designing and manufacturing systems that are extremely easy to use, but which do not compromise on power. This is done to simplify our customers' workload. We aim to offer "simple and effective solutions".

CESVA

Progress driven by research

experience

We have a highly qualified team of professionals, made up of specialist engineers from the fields of acoustics, mechanics, electronics, computing and electromagnetic compatibility. CESVA participates on a variety of national and international committees for the creation and revision of regulations and standards. This has enabled us to become a pioneer in the sector.

quality

Our company is ISO 9001 certified for the design, manufacture, calibration and sale of instruments for the measurement and control of noise.

innovation

"Single measurement range", "simultaneous measurement of all functions", "Bluetooth technology in insulation measurements" and "sound level meters with measurement protocols" are just some of the contributions made by CESVA to the world of acoustics. Our philosophy: "progress driven by research".

social responsibility

CESVA participates in the United Nations Global Compact, an international initiative which aims to foster corporate citizenship. CESVA is committed to policies based on environmental sustainability and responsibility. It is also part of the ECOTIC Foundation which works to protect the environment and promote sustainable development by raising awareness about the collection, treatment and control of residues from electrical and electronic equipment.
Every year CESVA actively participates in events held for the International Noise Awareness Day.

SC310 Class 1 analyser (1/1 + 1/3 + FFT)

One sound level meter, many solutions

An extremely powerful instrument, ideal for acoustics professionals who require a high-precision, high-performance and user-friendly instrument.

Features

- Class 1 IEC 61672 and ANSI.
- Real-time spectrum analyser with one-third octave bands: 10 Hz to 20 kHz (EF310 module); and octave bands: 31.5 Hz to 16 kHz.
- Simultaneous measurement of 84 parameters with a single measurement range: 23 to 140 dB peak with A, C and Z frequency weightings.
- Circular memory: downloads data while measurements are being taken.
- Multi-connectivity with PC: USB, Bluetooth®, modem and serial.
- Detachable preamplifier for use with extension cables and outdoor kit.
- *Capture Studio* software included.

Applications

- Measurement of sound insulation in one-third octave bands (ISO 140).
- Measurement of environmental noise parameters (ISO 1996-2): tonal, impulsive and low frequency components.
- Evaluation of industrial noise: functions at 125 ms intervals and FFT analysis.
- Real-time reverberation time in octave and one-third octave bands (ISO 3382-1/2).
- Single axis analysis of vibrations in buildings and FFT analysis.

Extensions for SC310

Modules

RT310 (Reverberation time)
Measures reverberation time by octave and one-third octave bands in real time (ISO 3382-1/-2).

EF310 (Extended frequency analysis)
Simultaneous measurement of one-third octave bands from 10 Hz to 20kHz, overall values (A, C and Z) and advanced parameters: tonality, impulsivity and low frequency.
Includes FFT analysis of 430 lines, from 0 to 20kHz.

DS310 (Dosimetry functions)
For the evaluation of noise exposure in the workplace in line with 2003/10/EC, and simultaneous evaluation of hearing protectors (PPE) using SNR, HML and octave bands.

VM310 (Vibration)
Measurements of exposure to whole-body vibration in buildings (ISO 2631-2) and verification of mechanical vibration.
(Includes PA001: preamplifier for accelerometer).

Accelerometers

AC006 (cable included)
EPE accelerometer for the measurement of vibration in buildings (ISO 2631-2).
Sensitivity: 1000 mV/g. Frequency range (± 10%): 0.2 Hz to 2600 Hz.

AC001 (cable included)
IEPE Accelerometer for the verification, analysis and measurement of machinery vibration.
Sensitivity: 100 mV/g. Frequency range (± 10%): 0.3 Hz to 14 kHz.

Real-time spectrum analyser sound level meters

SC-30 Class 1 analyser (1/1)

High precision analyser, indispensable to any engineering workplace for carrying out quick, convenient acoustic measurements.

Features

- Class 1 integrating sound level meter, in line with IEC 61672 and ANSI.
- Real-time octave band spectrum analyser 31.5 Hz–16 kHz.
- Simultaneous measurement of 54 parameters with a single measurement range: 23 to 140 dB peak, with A, C and Z frequency weightings.
- Detachable preamplifier for use with extension cables and outdoor kit.
- *Capture Studio* software included.

Applications

- Building acoustics. Measurement of sound insulation in octave bands (quality control), acoustic comfort and room evaluation (NC/NR curves).
- Evaluation of noise exposure in the workplace while also testing personal protective equipment: minimum metrological uncertainty of measurement (Directive 2003/10/EC).

SC160 Class 2 analyser (1/1)

Low-cost, user-friendly sound level meter with octave band frequency analysis.

Features

- Class 2 integrating sound level meter, in line with IEC 61672 and ANSI. Single measurement range: 30 to 140 dB peak.
- Real-time octave band spectrum analyser 31.5 Hz–16 kHz (only available for SC160).
- Evaluation of room noise using NC and NR curves.
- *Capture Studio* software included.

Applications

- Evaluation of sound systems (professional audio, megaphones, etc.)
- Evaluation of noise created by heating, ventilation and air conditioning installations (HVAC).

The more economical SC160sb model is also available without octave bands. It can be extended using the FB160 module.

Extensions for the SC-30 and SC160
## Modules

RT030 (Reverberation time)
Real-time octave band measurement of reverberation time (ISO 3382-1/-2).

DS030 (Dosimetry functions)
For the evaluation of noise exposure in the workplace as per 2003/10/ and simultaneous evaluation of the efficiency of personal protective equipment (PPE) using SNR, HML and octave bands.

FB160 (Octave band filters) only available for the SC160sb model.
Adds octave band analysis to the SC160sb sound level meter.
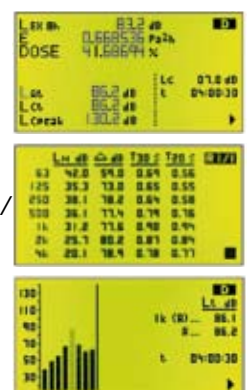
SC-20e Class 1 integrating meter

The robust and practical nature of this instrument ensures its continuity as part of our current range of equipment. The SC-20e is a sound level meter for the measurement of environmental noise, the inspection of vehicles and sound power.

Features

- Class 1 integrating sound level meter, in line with IEC and ANSI.
- Simultaneous measurement with a single measurement range: 23 to 140 dB peak and A or C frequency weightings.
- Detachable preamplifier for use with extension cables and outdoor kit.
- Memory for recording the time history of the measurement. Programmable Leq acquisition time.
- Real-time PC communication software for downloading data, producing reports, displaying data, calculating Leq and measurement interval percentile calculations.

Applications

- Technical inspection of vehicles: measurement of vehicle exhaust noise.
- Environmental acoustics: acoustic maps and outdoor measurements.
- Measurement of machinery sound power (CE mark approval).

SC101 Class 1 integrating meter
SC102 Class 2 integrating meter

The first sound level meter to be offered with measurement protocols: provides a step-by-step guide to the measurement process. Automates the checks and calculations set out in the regulations, right through to the final result. Economical and intuitive. Suitable for carrying out any kind of inspection.

Features

- Class 1/2 integrating sound level meter, in line with IEC 61672 and ANSI.
- Allows selection of measurement protocol (see Applications) and provides a step-by-step guide to the methods set out in the corresponding regulations.
- Automatically applies corrections and calculates results.
- Shows all required parameters on one screen.
- Large, high resolution 3.2" screen.
- Single range.

Applications

- Vehicle exhaust noise.
- Leisure and community noise.
- Noise exposure in the workplace.
- Mechanical noise and sound power.
- Audiovisual systems.
- ICT installations.
- Heating, ventilation and air conditioning installations (HVAC).

Real-time dosimeter spectrum analyser

DC112 Dosimeter analyser (1/1) / DC112d Dosimeter
DC112a Dosimeter analyser (1/1) / DC112k Dosimeter

High-performance octave band dosimeters DC112/DC112a. Ideal for workplace noise measurements in line with Directive 2003/10/EC.
DC112a and DC112k facilitate health and safety protection in line with OSHA, MSHA, etc.

Features

- Dosimeter DC112/DC112d complies with IEC 61252 standard and Directive 2003/10/EC.
- Dosimeter DC112a/DC112k complies with ANSI S1.25 and OSHA, MSHA, DoD, ACGIH, NIOSH, etc.
- Octave band evaluation of Personal Protective Equipment (PPE).
- Stores time history in memory.
- Evaluates noise exposure where measurement times are less than exposure times (projected parameters).
- Battery or USB power supply.
- *Capture Studio* software included.
- Lower cost DC112d/DC112k model available without octave band analysis.

Applications

- Evaluation of workplace noise exposure as well as testing personal protective equipment (PPE).

Extensions for DC112d / DC112k

EF112 Module Adds octave band analysis to the DC112d/DC112k dosimeter.

*The CESVA Risk Manager (CRM) software may also be of interest. *See page 11.*

Calibrators

CB006 (class 1) and CB004 (class 2) acoustic calibrators

Maximum precision instrument for testing sound level meters and dosimeters.

Features

- Acoustic calibrator in line with IEC 60942:2003 and EN 60942:2005 standards. Meets class 1 requirements for the CB006 and class 2 requirements for the CB004.
- Frequency and testing level: 1 kHz and 94dB.
- No correction required for atmospheric pressure and temperature.

Applications

- Testing of sound level meters and dosimeters.

CV211 and CV110 Vibration calibrators

Instrument for quick and effective testing of vibrometers.

Features

- CV211: Multifrequency and multilevel calibrator for hand-arm, whole body and building vibration measurements (1 m/s^2 at 15.9 Hz, 10 m/s^2 at 159 Hz, …).
- CV110: Calibrator for hand-arm measurements (10 m/s^2 at 159 Hz).
- Suitable for accelerometers weighting up to 500 g.

VC431 Triaxial vibrometer

High performance vibrometer which allows vibration measurements to be carried out simultaneously on three axes. Highly intuitive menu which simplifies and speeds up the measurement process. No previous configuration required.

Features

- Vibrometer which meets the ISO 8041 standard and Directive 2002/44/EC.
- Single measurement range, independent of the application.
- Simultaneous measurement of all parameters −with suitable weighting− for each application (HA, WB, buildings and structure), displayed on a single screen.
- Projected parameters: vibration evaluation where measurement time is less than exposure time (Vibration at work).
- *Capture Studio* software included.

Applications

- Evaluation of workplace vibration exposure:
  - Hand-Arm system (HA) 2002/44/EC and ISO 5349-2.
  - Whole body system (WB) 2002/44/EC and ISO 2631-1.
- Evaluation of vibration in buildings ISO 2631-2.
- Effects of vibration on structures DIN 4150-3.

AC031, AC032 and AC033 Accelerometers

AC031 triaxial (cable and accessories included)

Triaxial IEPE accelerometer for the measurement of workplace vibration exposure transmitted through the hand-arm system.
Sensitivity: 10 mV/g.
Frequency range (10%): 1 Hz to 16000 Hz.

AC032 triaxial (cable included)

Triaxial IEPE accelerometer for the measurement of whole body vibrations in building interiors. Includes cable.
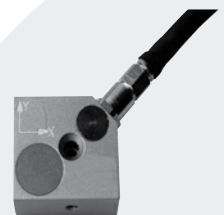Sensitivity: 500 mV/g.
Frequency range (10%): 0.13 Hz to 4800 Hz.

AC033 triaxial (cable included)

Triaxial IEPE accelerometer for the measurement of whole body workplace vibration exposure.
Sensitivity: 100 mV/g.
Frequency range (10%): 0.5 Hz to 3500 Hz.

Equipment for insulation measurement

MI005 Tapping machine

Normalised impact machine for the generation of impact noise in the measurement (in laboratories or on site) of floor impact noise sound insulation (ISO 10140-3 and ISO 140-7).

Features

- Meets Annex E of ISO 10140-5 and annex A of ISO 140-7.
- Robust, light-weight and easy to handle.
- Consists of 5 hammers with electronic impact control.
- Manual or remote controlled operation via a PC (cable or Bluetooth® wireless).
- Remote control software included.
- Remote control MD005 (optional).
- Overheating protection.
- Includes transportation box with wheels.
- Assembly BA005: internal battery and charger (optional).

FP121 Pressure source

The pressure source consists of the AP601 noise generator and the BP012 omnidirectional dodecahedral loudspeaker. It enables suitable noise to be generated to carry out sound insulation, reverberation time and sound absorption measurements.

Features

- Complies with ISO 140, ISO 10140, ISO 3382-1/-2 and ISO 354.
- Omnidirectional radiation diagram.
- 123 dB Sound Power.
- White, pink and filtered pink noise generator (one-third octave bands from 50 to 5,000 Hz).
- Automatic cooling system with automatic fan cut out.
- Can be operated manually or using a PC.
- Built in Bluetooth© for remote control.
- Remote control software included.
- Includes transportation box with wheels.

Applications

- ISO 140: Measurement of sound insulation in buildings and of building elements.
- ISO 10140: Laboratory measurement of sound insulation of building elements.
- ISO 3382-1: Measurement of room acoustic parameters (Performance spaces).
- ISO 3382-2: Measurement of room acoustic parameters (Reverberation time in ordinary rooms).
- ISO 354:1985 Measurement of sound absorption in a reverberation room.

* Tripod not included

CMA software for carrying out insulation measurements

CESVA Measuring Assistant software manages all the equipment involved in insulation measurement for airborne noise, impact sound and façade sound. The program provides a step-by-step guide and complete real-time support before, during and after the measurement, optimising speed and ease of use.
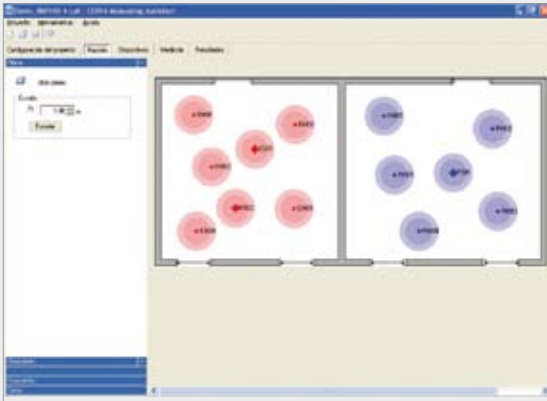
BEFORE: Imports drawings, selects measurement points and verifies contour conditions.

DURING: Automatically manages devices using Bluetooth® with a step-by-step guide to measurement. Indicates the position of equipment, starting/stopping of noise sources, and gives real-time reception and verification of the measurements taken by sound level meters.

AFTER: Direct interaction with CIS in order to receive the final report on site. With this software, a number of CESVA sound level meter analysers can be converted into a wireless multichannel measurement system. The system is fully extendible.

*****All upgrades are free.**

CIS Software for the calculation and generation of insulation reports

CESVA Insulation Studio is powerful software for carrying out calculations and generating sound insulation reports: airborne noise insulation between rooms, façade insulation, impact noise insulation and reverberation times (ISO 140, ISO 717 and ISO 3382-1/-2).

Features

- Designed for laboratory and on-site testing (ISO 140-3/-4/-5/-6/-7/-8) and to meet national and international regulations.
- Quick and easy automatic creation of reports.
- Simultaneous evaluation of the degree of nonlinearity and curvature of all the RT measurements at the touch of a button.
- Calculation of uncertainty in RT measurements.
- Enables decay curves to be edited for the calculation of reverberation time by a number of methods.
- CIS enables reports to be printed directly or saved as PDF files or images.

*****All upgrades are free.**

Bluetooth® wireless communication system

Bluetooth® wireless, two-way, multichannel communication system, using a number of devices: one connected to a PC and the others connected to each piece of equipment which makes up the system. Suitable for insulation measurements of airborne noise, façades or impact noise. Signal transmission through concrete walls, multi-point environmental measurements, multichannel measurements and dynamic acoustic maps.

- Simultaneous two-way communication between PC and analysers, pressure sources and tapping machines.

Equipment for environmental measurements

TA024 Environmental noise monitoring terminal

The ideal solution for monitoring environmental noise. Allows detailed analysis of environmental noise to be carried out quickly and easily.

Consists of an outdoor control cabinet AR054 which contains:
- SC310 sound level meter to carry out sound measurements.
- UC001 control and communications unit for the management of recorded data, recording of audio (mp3) and station position information.
- GPS GS 353.
- MR300 3.5G modem to upload data to a server.
- BA123 power supply and battery to power the system in the event of a power failure.

All data is processed and uploaded to the SERDAT data server.

Features

- The TA024 maintains the legal metrology of the SC310 sound level meter.
- Simultaneously measures the functions required to evaluate environmental noise, impulsivity, tonality and low frequency content.
- Carries out remote control and management of data.
- Integration time up to 125 ms, and the threshold level from which the audio is recorded, both programmable.
- Easy to assemble and disassemble.

TK200 and TK1000 Outside kits

The perfect solution for measurements in outdoor environments.

TK200

Features

- Includes protection against weather conditions: dehumidifier, protection for the preamplifier and microphone against rain, wind and birds.
- Use of the TK200 or TK1000 does not alter the class of CESVA sound level meters.

TK1000

Equipment for environmental measurements

CSE software for editing and re-calculating measurements

CSE (Capture Studio Editor) software enables data captured by Dosimeters and Spectrum Analysers (CESVA SC310, SC-30, SC160, DC112 and VC431 vibrometer) to be edited.

An intuitive and user-friendly tool for the extraction or deletion of any undesired time section. Permits the re-calculation of global and spectrum values for the desired section, as well as statistical information (maximums, minimums, percentiles).

GSM / GPRS Communications system

The mobile communications system for CESVA equipment is based on the GSM/GPRS standard and allows communication between different CESVA instruments (sound level meters and limiters) and a PC.

Applications

• Remotely downloads data from the equipment to a PC and communicates in real time.
• Convenient data capture from monitoring stations (dynamic acoustic maps) or sound control systems for musical and leisure activities (acoustic limiters).

Equipment for the measurement of occupational hazards

## CRM Software for the evaluation of noise exposure in the workplace

CRM (CESVA Risk Manager) is not only a calculation and reporting tool, but it also provides a complete solution for protection and the prevention of risks deriving from workplace noise. Step-by-step guide to meet the Directive 2003/10/EC and Spanish, French and Portuguese law, as well as the ISO 9612 standard.

CRM:

• Calculates and prepares reports in line with Directive 2003/10/EC, the ISO 9612 standard and Spanish, Portuguese and French law.
• Evaluates by STRATEGIES: Tasks / Job / Working day.
• Plans the measurements to be carried out in advance, saving time and money.
• Automatically calculates UNCERTAINTIES.
• Evaluates the results with or without PPE (hearing protectors).
• Prints and exports the standard results report.
• Simulates technological and organisational measures (improvements).
• Prepares a comparative report of technological and organisational measures.

*All upgrades are free.

CESVA integrated solutions
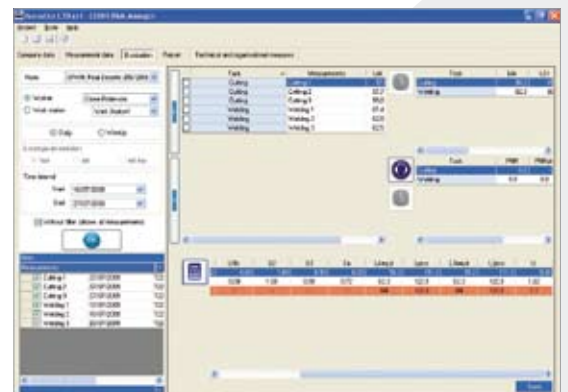
GIP Solution for the measurement of insulation

GIP (Global Insulation Package) is the definitive solution for carrying out the measurement (ISO 140), calculation and preparation of sound insulation reports (ISO 717), in a quick, easy and economical way.

The GIP solution centralises the measurement on a laptop computer (using CMA software), which allows real-time wireless (Bluetooth®) control both of noise sources (FP120 and MI005) and various analysers (SC310).

Once the measurement process is complete, all data is included in the insulation project. The project is opened in CIS, instantly creating the standardised insulation report.

NSN Solution for Environmental monitoring

NSN (Noise Surveillance Network) is the perfect solution for detecting and analysing noise problems. It is also a tool for the objective quantification of the development of action plans for reducing noise pollution levels. It provides real-time evaluation of action points for the improvement of acoustic comfort.

It is a complete solution with Legal Metrology for the automatic analysis of noise pollution. It uses a computer so it is not necessary to leave the office or analyse data unnecessarily. NSN allows the essential data to be studied in detail and a report to be prepared.

NSN is the most efficient and convenient way of saving time and money when analysing noise problems generated by activities, infrastructures or cities.
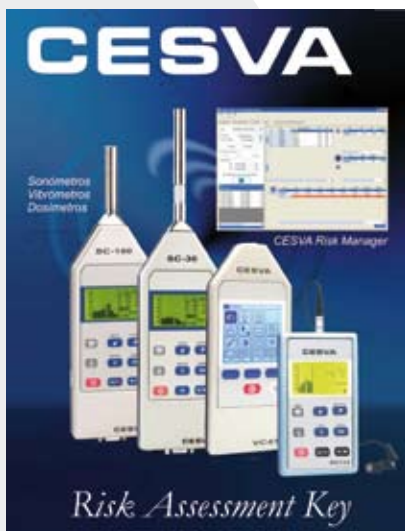
RAK Solution for the evaluation of occupational hazards

RAK (Risk Assessment Key) is the complete solution to meet mandatory Directives 2003/10/EC and 2002/44/EC for the prevention of risks derived from exposure to noise and vibrations in the workplace, respectively.

RAK allows noise measurements to be taken using sound level meters with dosimeter function modules and dosimeters, as well as vibration measurements using vibrometers and triaxial accelerometers.

RAK includes the CSE and CRM software to analyse and obtain final results and create standardised reports.

Laboratory instruments

C-130 and C-250 Microphones

C-130 Condenser microphone polarised to 200V.

C-250 Prepolarised condenser microphone.

PA-13, PA-14, PA-25 and PA-05 Preamplifiers

PA-05

PA-25

PA-13 and PA-14

PA-13 Preamplifier for C-130 200V polarised microphone.

PA-14 Preamplifier for C-250 prepolarised microphone.

PA-25 ICP® Preamplifier for C-250 prepolarised microphone.

PA-05 ICP® Preamplifier for P-05 microphone.

Accessories

CAPTURE STUDIO Software for downloading and displaying measurements

Free software for CESVA analysers (SC310, SC-30, SC160, DC112 and VC431) and dosimeters which enables the user to:

• Set the analyser, dosimeter and vibrometer.
• Download data from the equipment memory.
• View measured functions in real time.
• Represent data graphically and numerically.
• Convert data to different formats.
• Copy graphics and tables to the clipboard for the creation of reports.

Accessories
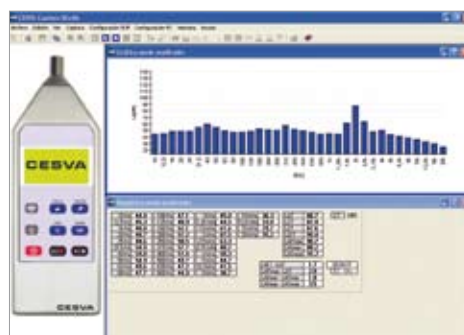
ML060, ML50 and ML10 Carry cases

Carry cases for sound level meter equipment.
ML060 (special outdoors) 51 x 38 x 15 cm.
ML50 49 x 36 x 14 cm.
ML10 39 x 32 x 12 cm.

ML060

ML50

ML10

Tripods and rods

Tripod for sound level meters, dosimeters and microphones (for use with TR001).
TR40 from 20 cm to 1.2 m.
TR050 from 20 cm to 1.5 m.

Tripod for BP012 omnidirectional loudspeaker.
TR012 Tripod up to 2 m.
TR014 Tripod with wheels up to 2 m.

Rod for façade measurements.
PR003 3 m rod.

Data transmission cables

Cables for various sound level meter models:
• Data transmission to a PC (USB, serial and serial-USB).
• Audio output (AC output).

Extension cables

CN Extension cables of different lengths (3, 10 and 30 m) for SC310, SC-30, SC-20e and SC101 sound level meters.
CNR-ITV 10 m extension cable for SC160, SC-15c and SC102 sound level meters.

Power supplies

• Power supplies for all types of grid: 230 V / 50 Hz or 110 V / 60 Hz.
• Battery adapters for each sound level meter: from 12 V to 5 V or from 12V to 9 V.

IM003 Printer

40 column serial printer, RS-serial connection with battery and power supply.

Listening and responding to our customers helps us improve. This, in turn, enables us to reach out to our customers in order to offer the measurement solutions best suited to their needs.

CESVA

Proximity, speed, efficiency

information and advice

- We recommend the best product to suit your needs.
- Practical demonstrations before you buy.
- **www.cesva.com**
    - Comprehensive and up-to-date information.
    - Technical specifications and free software upgrades.
    - Online guide: choosing the right sound level meter.
    - Quotations without obligation.
    - Newsletter: **sign up!**

customer service

- Enquiries about the use of our instruments and software are resolved in less than 24 hours by our team of engineers.
- Implementation of solutions and equipment. Essential for making the most of all their features.

training

- Training seminars for our equipment.
- Technical conferences on new legislation and measurement regulations.
- Group training: professional colleges, local police.

after sales service

As manufacturers, we can guarantee the quality of our after sales service which is carried out by specialised technicians:
- Minimum turnaround time (no need to wait).
- Competitive prices.
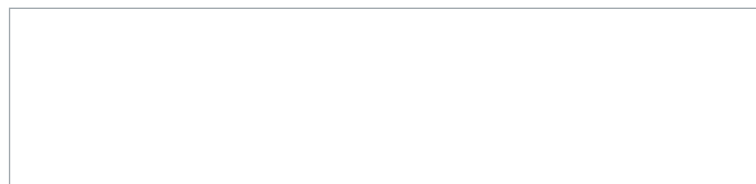- Own laboratory for testing and calibration.

worldwide distribution

- Fast and efficient distribution network.
- Our products are currently present in more than 40 countries throughout the world.
- Easily accessible commercial network.

CESVA *instruments, s.l.*

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