

CEL-621 Integrating Environmental Sound level meter

Introduction

Many environmental noise measurements require a complete knowledge of the variable noise level climate over a representative period of time. The **CEL-621** meter is designed to satisfy this need as a short term measurement instrument. It can measure the popular max, min, peak and time average levels plus up to 5 statistical or percentile results for the overall run.

The wide 120 dB dynamic range means that the user does not need to worry about changing the input range settings as it will always be on the right range. The provision of the three popular frequency weightings and the three time weightings enable many different measurements to be taken by new and experienced users alike to correctly characterize the noise.

Applications

For measurements of simple noise levels the instantaneous sound pressure level is often adequate. However, in many outdoor situations the noise levels are too variable or change too quickly to estimate the average level or exceedance levels correctly. The **CEL-621** is designed to assist in the correct description of these difficult

noise situations by providing the time average noise level with the 3, 4 and 5 dB exchange rates. Changing noise levels are properly integrating into the overall time average answer and displayed as the Leq (with Q=3). 5 LN% values (10%, 50%, 90%, 95% and 99%) are calculated and stored from the instantaneous sound levels.

Key benefits

- Wide dynamic range from 20 to 140 dB on single span
- A, C and Z simultaneous frequency weightings
- Slow, Fast and Impulse rms. time responses
- Large 240 x 320 pixel color ¼ VGA graphic display
- Easy to use menu structure
- Integrating capability for time average values plus peak
- Available with 5 statistical LN% values measured for broadband levels
- Available in ANSI/IEC class 1 and class 2 accuracy
- Available as broad band, octave or third octave band models
- Storage of all results simultaneously in a huge non-volatile memory
- Available as complete measurement kits with acoustic calibrator and case



CEL-621.B Integrating
Environmental real time octave
band analyzer

This enables the **CEL-621** to correctly assess changing noise levels and provide the appropriate result for many short term community noise level surveys. Additional octave (1/3 oct) band filters in the B or C version of the **CEL-621** provide for a comprehensive frequency analysis of tonal noise levels for noise control applications.

Ordering information

General purpose sound meters

CEL-621.A2
CEL-621.B2
CEL-621.C2

(Note that Type 1 variants are also available by specifying the part number as CEL-621.A1 for example)

Type 2 sound level meter with wrist strap, USB cable and windscreen
Type 2 octave band analyzer & wrist strap, USB cable and windscreen
Type 2 octave and third octave band analyzer & wrist strap, USB cable and windscreen

Standard sound meter kits

e.g. CEL-621.B2/K1

Type 2 Oct Sound level meter kit with calibrator, USB cable and case

PC sound level meter kits

e.g. CEL-621.C2/K2

Type 2 Third Octave band analyzer kit with calibrator, USB cable, plus Casella Insight database management software cd and case

| Technical Specification - General | |
|--|---|
| Accuracy: | ANSI S1.4 & S1.43, IEC 61672-1 2002-5 |
| Frequency filters comply with: | ANSI S1.11 and IEC 61260 |
| Microphone type: | Removable ½" Free field Electret microphone on fixed preamplifier |
| Reference Conditions: | 68°F (20°C) air temperature, 65% Relative Humidity, 1013 mbar (101.325 kPa) atmospheric pressure. |
| Operating Temperature Range: | 14 to 122°F (-10 to 50°C) (Class 1) 32 to 104°F (0 to 40°C) (Class 2) |
| Effect of Humidity: | Less than ±0.5dB over the range 30 to 90% RH (non-condensing), rel. to value at ref. conditions |
| Operating pressure range: | 650 to 1080 mbar (65 to 108 kPa) |
| Batteries: | 3 x AA Alkaline or rechargeable types |
| Battery Life: (hours) | Up to 12 hours without backlight |
| Dimensions w x h x d: (in/mm) | 2.8 x 9.0 x 1.2 in (71.5x 230.0x 31.0mm) including preamplifier and microphone |
| Weight including batteries: (oz/gm) | 10.1 oz (< 291g) |
| Tripod socket for fixed measurements | Yes via standard camera thread (1/4" size) |
| Operator controls: | buttons for power On/Off and 2 x context sensitive menu selection + 4 navigation and confirm buttons |

| Technical Specification – Performance | |
|--|---|
| Total measurement range (dB) | 20 to 140 |
| Dynamic range on single measurement span (dB) | 120 |
| Noise floor (A weighted dB) | < 25 (Class 1) < 30 (Class 2) |
| Frequency weightings | A, C & Z (unweighted) |
| Time weightings | Slow, Fast and Impulse |
| Displayed parameters available as per user selected list or using pre-configured setups | Instantaneous level – Lp, peak level Lpk Maximum level Lmx, Minimum level – Lmn Average levels Leq, LDOD, Lavg, LAE, Ltm3, Ltm5 Percentile levels LN% 5 values for broadband results |
| Octave/third octave band measurements | Complete spectrum plus A & C & Z broad band levels |
| Frequency analysis measurements – Octave & Third Octave as options in B and C version meters | 11 octave bands 16 Hz to 16 kHz 33 third octave bands from 12.5 Hz to 20 kHz |
| Measurements made in oct (1/3 oct) band mode include | Lmx and Leq with selected freq and time weightings |
| Reset of max/min/average level from key press by user | Yes – with non-decaying max/min hold |
| Duration timer for run | Yes – from 00:00:01 to 24:00:00 to 1 sec resolution |
| Display type | 240 x 320 full color dot matrix LCD digital including real-time analog bar graph scale |
| Display resolution – numeric (dB) | 0.1 |
| Display resolution – graphical (dB) | 1 |
| Update rate for display (seconds) | 0.5 |
| Displayed time span for time history chart (minutes) | Last 60 seconds |
| Calibration method | Automatically recognized by meter |
| Signal detected when calibrator placed over microphone at 1 kHz frequency | Calibration level set to 114.0 or 94.0 dB by user With +/-1 dB span and 0.1 dB resolution |
| External power option (12 Vdc) | Yes via universal CEL-PC18 unit |
| Analog outputs | AC (and optional DC) via 2.5 mm jack socket |
| AC output characteristics - (Provided for DAT tape / PC wav file recording or headphone applications) | Approx 0.85V RMS FSD output on selected sound level measurement range. Minimum load impedance 22kΩ. |
| DC output characteristics - (Provided at time of order as option for connection to chart recorder or pc data logging system) | 0 to 1.3V DC for FSD on selected range. Output corresponds to selected frequency and time weighting. 2kΩ Output impedance |
| Digital output of stored result sets | USB 2.0 format of memory results as .CSV text file via 'mini B' USB (meter acts as memory card) |