

## CEL-251 1/2" measurement microphone capsule

### Introduction

The **CEL-251** microphone is the best choice for use in ANSI and IEC61672 Class 1 Sound Level Meters and other noise measurements requiring Class 1 (or precision) accuracy. It is a 1/2" prepolarized free-field measurement microphone whose development spans over 30 years in design, manufacture, calibration, and field-testing. Every capsule is supplied with an individual calibration chart specific to that microphone.



*CEL-251 microphone capsule*

### Key benefits

- Pre polarized design can be used with preamplifiers that do not supply bias voltage
- Frequency range 20 Hz to 20 kHz  $\pm$  2 dB
- Free-field response
- Rugged design for long trouble free operating life
- Standard WS2 thread size for interchangeability with many popular measurement devices
- Measurements up to 146 dB
- Low noise floor for quiet background measurements

### Applications

The **CEL-251** is handcrafted to exacting standards along with rigorous mechanical and acoustic testing to ensure its high quality, reliability, and extreme stability in all kinds of environments. Its incredible performance stems from its nickel alloy diaphragm using the latest diaphragm coating technology. The **CEL-251** microphone housing is also made from the same nickel alloy to ensure the smallest temperature coefficients.

Production quality control for the **CEL-251** uses only 40% of the frequency response tolerances allowed by IEC61672 Class 1 microphones. The figure shows the typical free-field frequency response curve of the **CEL-251** (black curve) against quality control limits (red curves). This ensures that the sound level meter or other measurement system connected to the microphone can use the other 60% of the allowed tolerances.

Each microphone is supplied with its individual calibration data for frequency response and sensitivity. Its stability and versatility has been proven in all fields of acoustic measurements. The capsule uses the international standard thread 60 UNS which ensures compatibility with a wide range of microphone preamplifiers and measurement instruments such as the CEL-600, CEL-400 and CEL-500 series of noise analyzers.

### Ordering information

CEL-251

Recommended calibrators  
CEL-120/1

CEL-284 or CEL-110/1

1/2" pre polarized measurement microphone capsule supplied in presentation box with individual calibration certificate and results

Dual level acoustic calibrator  
Class 1 (114 and 94 dB at 1 kHz)

Single level acoustic calibrator  
Class 1 (114 dB at 1 kHz)

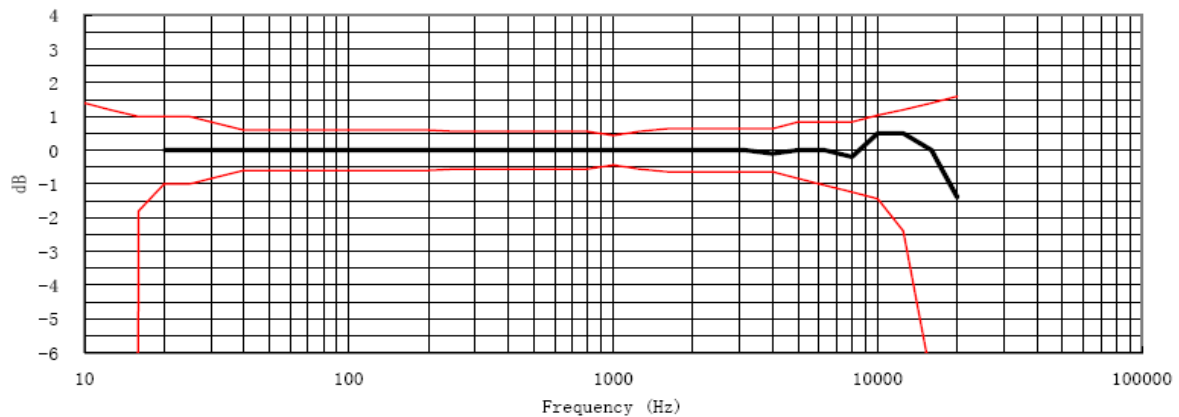


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## Technical Specifications

|   |                                       |
|---|---------------------------------------|
| Transducer type   | Capacitive pressure transducer        |
| Frequency range (free-field response)                                   | 20 Hz ... 20 kHz ( $\pm 2$ dB)        |
| Sensitivity at 1 kHz (nominal)  | 50 mV/Pa*                             |
| Max. SPL for THD $\leq 3\%$ at 1 kHz                                    | 146 dB                                |
| Inherent 'A' weighted noise level with CEL-400 or 500 sound level meter | <16 dB                                |
| Polarization voltage used   | Back-electret (200 V dc not required) |
| Pressure equalization venting   | Rear vented                           |
| Polarized cartridge capacitance (at 1 kHz)                              | 16 pF*                                |
| Operating temperature range   | -30 ... +80 °C                        |
| Main ambient temperature coefficient                                    | $\leq 0.005$ dB/°C                    |
| Main ambient pressure coefficient                                       | -0.004 dB/kPa                         |
| Main ambient humidity coefficient                                       | -0.003 dB/%RH                         |
| Diameter (with protection grid)   | 13,2 $\pm$ 0,02 mm                    |
| Diameter (without protection grid)                                      | 12,7 $\pm$ 0,02 mm                    |
| Height  | 16,4 mm                               |
| Weight  | 9 g                                   |
| Preamplifier thread   | 11,7 mm 60 UNS                        |
| Protection grid thread  | 12,7 mm 60 UNS                        |

## Typical frequency response



The black line shows the individual frequency response with the red lines showing the manufacturing tolerances used in production

## Polar response curves

