Type 2239 A is a Class 1 sound level meter that is designed to be quick and easy to use when making environmental noise and occupational-health related measurements. A large LCD screen displays measurements and includes a quasi-analog bar showing the current sound pressure level. The instrument has two parallel, independently weighted detectors that enable it to display RMS and Peak readings simultaneously.

USES
• Control of noise levels in the workplace
• Environmental noise surveys
• Complaint investigation
• Sound power measurements

FEATURES
• Conforms with IEC 61672 – 1 Class 1, IEC 60651 and 60804 Type 1
• Conforms with ANSI S1–41983 and S1.43–1997 Type 1
• Simultaneous RMS and Peak measurements (with independent frequency weightings)
• Measures L_{eq}, Peak, MaxP, MaxL, MinL, SPL, and Inst
• 40 records of stored results
• Back-lit display
• Five built-in languages: English, German, French, Spanish and Italian

Description
Type 2239 A is a Class 1 sound level meter. It is designed to be quick and easy to use when taking environmental noise and occupational-health related measurements.

Measurements are displayed on a large LCD screen, which includes a quasi-analog bar that shows the current sound pressure level.

The instrument features two parallel, independently weighted detectors. This enables it to display both RMS and Peak readings simultaneously.
**Intuitive User-interface**
The clearly marked arrows and symbols on the front panel, combined with the large LCD screen (with back light), make it very easy to learn to use the sound level meter. The display is clear and concise. Clear instructions and warnings guide you through your measurement.

**Real-time Clock**
Type 2239 A has a real-time clock and calendar which mark each measurement with date and time.

**Data Storage and Processing**
The instrument is capable of storing up to 40 records of measurement results. Each record stores the date, measurement time, L_{eq}, MaxP, MaxL, MinL and overload status. These results can be transferred to a PC using standard communications software. Measurement results can also be output to a portable printer as you take them.

**Fast and Easy Calibration**
To calibrate Type 2239 A, simply fit a calibrator to the sound level meter and press a button. The sound level meter calculates the required correction factor and calibrates itself automatically.

**AC Output**
The linearly-weighted AC output enables you to make a direct calibrated recording (on Digital Audio Tape, for example), which can be used later for complete acoustical analysis. It also enables monitoring by headphone.

**Post-processing of Data**
All data from Type 2239 A can be read and post-processed by Brüel & Kjær’s environmental software packages. Noise Explorer software Type 7815 allows you to store, manage and inspect data from all Brüel & Kjær sound level meters; data can be exported to spreadsheets and pasted into reports. Type 7825 Protector™ is unique software for occupational health work; measurements made with Type 2239 A at working points can, for example, be used to calculate noise doses for all personnel working at that point. Evaluator™ Type 7820/21 is dedicated to handling environmental-noise measurements and calculations of rating levels.

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**Compliance with Standards**

<table>
<thead>
<tr>
<th>CE-mark indicates compliance with: EMC Directive and Low Voltage Directive. C-Tick mark indicates compliance with the EMC requirements of Australia and New Zealand</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Safety</strong></td>
</tr>
<tr>
<td><strong>EMC Immunity</strong></td>
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</tbody>
</table>
Specifications – Integrating Sound Level Meter Type 2239 A

STANDARDS
Conforms with the following:
• IEC/EN 61672 (2002) Class 1
• IEC 60651 Type 1 (1979) and amendment 1 (1993) and Amendment 2 (2000)
• IEC 60804 Type 1 (2000)
• EN 60651 Type 1 and Amendment 1 (2000)
• EN 60804 Type 1 and Amendment 1 (2000)
• ANSI S1.4–1983 Type S1
• ANSI S1.43 – 1997 Type 1

MEASURING RANGES

<table>
<thead>
<tr>
<th>Range (dB)</th>
<th>Max. Peak Level</th>
<th>Upper Limit (RMS) for Signals with Crest Factor 10 (20 dB)</th>
</tr>
</thead>
<tbody>
<tr>
<td>30 – 100</td>
<td>103</td>
<td>83</td>
</tr>
<tr>
<td>50 – 120</td>
<td>123</td>
<td>103</td>
</tr>
<tr>
<td>70 – 140</td>
<td>143</td>
<td>123</td>
</tr>
</tbody>
</table>

NOISE FLOOR
Below measurement range – less than 30 dB

DETECTORS
Simultaneous RMS and Peak with independent frequency weightings
Linearity Range: 70 dB
Pulse Range: 73 dB
Non-linear Distortion: insignificant
Peak Detector Rise Time: Typically 50 µs (< 100 µs)

FREQUENCY WEIGHTINGS
RMS: A or C
Peak: C

MICROPHONE
Type 4188 Prepolarized Free-field 1/2" Condenser Microphone
Sensitivity: ~30 dB re 1 V/Pa ±2 dB
Frequency Range: 8 Hz to 16 kHz ±2 dB
Capacitance: 12 pF

TIME WEIGHTINGS
F, S, I (Fast, Slow, and Impulse)

PARAMETERS
Types: Leq, MaxP, MaxL, MinL, Peak, SPL, Inst.
Resolution: 0.1 dB
Updated: Once per second

EXCHANGE RATE
3 dB

MEMORY
40 Records of Measurement Results

CLOCK
Real-time (calendar) and measurement duration

VIBRATION SENSITIVITY
< 80 dB at 1 m/s² horizontally
< 85 dB at 1 m/s² vertically

AC OUTPUT
Short-circuit protected LEMO series 00 socket
Max. Output: 0.5 V RMS
Output Resistance: 100 Ω
Output: Linear

DISPLAY
4 line back-lit LCD showing:
• Input signal level – indicated with a quasi-analog bar (updated 15 times per second)
• Selected parameter with level
• Warnings for overload and low battery power
• Measuring range
• Time and frequency weighting
• Elapsed measurement time
• Menus for displaying and editing settings
• Stored measurement results can be recalled

BATTERIES
Four 1.5 V LR6/AA size alkaline cells
Lifetime (at room temperature): Typically >12 h

EFFECT OF MAGNETIC FIELD
80 A/m (1Ørsted) gives < 34 dB

SERIAL INTERFACE
Compatible with:
• EIA–574
• EIA–232–E with 25-pole adaptor

Baud Rate: 9600
Data Bits: 8
Stop Bit: 1
Parity: None
Handshake: XON/XOFF

ENVIRONMENTAL EFFECTS
Storage Temp.: −25 to +60°C (−13 to +140°F)
Operating Temp.: −10 to +50°C (14 to 122°F)
Temperature Effect: < 0.5 dB (−10 to +50°C)
Humidity Effect: < 0.5 dB for 30%<RH<90% (at 40°C, 1 kHz)

PHYSICAL CHARACTERISTICS
Size: 257×97×41 mm (10.1"×3.8"×1.6")
Weight: 460 g (1.01 lb)(including batteries)

Ordering Information
Type 2239 A Integrating Sound Level Meter
Includes the following accessories
Type 4188 Prepolarized Free-field 1/2" Microphone
KE 0323 Shoulder Bag
UA 1236 Protective Cover
4 × QB 0013 1.5 V LR6/AA Alkaline Cells

OPTIONAL ACCESSORIES
Type 4231 Sound Level Calibrator
Type 4226 Multifunction Acoustic Calibrator
Type 2322 Portable Printer
Type 7815 Noise Explorer Software
Type 7820 Evaluator Software

Type 7821 Evaluator Light Software
Type 7825 Protector Software
UA 1251 Tripod
UA 0801 Tripod
UA 0459 Windscreen (∅ 65 mm)
AO 0403 LEMO to BNC Cable
AO 1442 9-pole Cable with 25-pole Adaptor (for serial interface to computer)
KE 0325 Carrying Case with Insert for Sound Level Meter, Sound Level Calibrator Type 4231 and Tripod UA 1251 and Printer Type 2322