New Generation
Hand-held Analyzer
Type 2250

What’s unique in Type 2250?

- It’s EASY
  - It fits your hand, be it small or large
  - Vital measurement tasks – start, pause, save – carried out single-handedly
  - Drop-down menus provide direct access to most set-ups
  - Even the complex set-ups are not buried deep in menus: expand and collapse in Windows/Outlook folder style
  - Use the touch-screen or use the navigation keys, choose what’s appropriate for you
  - Customise display to your preferences
  - Full documentation of measurement, all automatically: set-up, calibration, instrument, transducer, comments (written and spoken), windscreen – it’s all just a part of your measurement, don’t fiddle with separate files and notes
  - Data automatically synchronised between Type 2250 and PC when connected
What's unique in Type 2250?

- It's SAFE
  - Non-slip surfaces provide a secure grip
  - Massive dynamic range:
    No range change, no overload, no underrange
  - Calibration history, separate for each transducer
  - Transducer database: Select transducer and the correct hardware set-up is automatically loaded

- It's CLEVER
  - Talk to me! Annotate your measurement with spoken comments
    » Separate microphone for comments, can be used during measurements without interference (patents pending)
    » Automatically attached to measurement as documentation
  - Annotate your measurement with written comments
    » Attached to measurement as documentation
  - Windscreen automatically detected and the frequency response corrected accordingly

2250 Sound Level Meter Software – BZ 7222

Included with every Type 2250

- Automatic windscreen correction
- Free-field/diffuse-field correction
- 120 dB Dynamic Range
  - no need for range switching
- Sound levels up to 140dB with supplied Microphone Type 4189
  - up to 152dB using Microphone Type 4191
- Frequency range: 3Hz – 20kHz
- Broadband statistics based on $L_{Aeq}$ or $L_{AF}$
- IEC/ANSI SLM standards Type/Class 1
- Weightings: A, C, Z and F, S, I
- Pre-set measurement duration
2250 Sound Level Meter Software – BZ 7222

- Multi-language user interface (English, French, German, Italian, Spanish)
- Voice and text annotation of measurements
- Display colour-schemes optimised for day, night, indoor and outdoor use
- Context-sensitive on-line help

2250 Frequency Analysis Software - BZ7223

- IEC/ANSI filter standards
- 120 dB Dynamic Range
- 1/1-octave centre freq. 8Hz to 16kHz
- 1/3-octave centre freq. 6.3Hz to 20kHz
2250 Logging Software - BZ7224

Logging of broadband parameters
Logging of statistics
Logging of spectra (if frequency analysis software is present)
Logging interval 1s to 24h
LAeq or LAF logged every 100ms
Profile display
Markers on profile
Voice markers
Local or remote control of start/stop
Remote control using Compact Flash modem
Transfer of data while measuring (USB or modem)

PC Software for Handheld Analyzers - BZ 5203

Included free on Environmental Software (BZ 5503, delivered on CD - BZ 5298)
Synchronisation of project data and setups between Type 2250 and PC
On-line or off-line setup of instrument
Advanced data management
Export to Excel spreadsheets
Remote instrument display via USB connection
Remote instrument operation via USB connection
Type 2250 measurement data compatible with PC software Type 7815, Type 7820, Type 7825
Surface Microphone

A new Revolutionary Technology from Brüel & Kjær

Contents

- Historical Background
- Technical background
- Technical Specifications
  » Environmental requirements
  » Miniaturisation
- Automotive applications
Requirement from Aerospace

- Environmental Requirements
  - De-icing
  - Operational Temperature range: -55°C - +100°C.
  - Operation at 25000 ft, 0.4 Bar, -55°C, mach 0.8.
  - High vibration levels
  - Other requirements as normal measurement microphones

- Miniaturisation
  - Aerodynamic => Flat (2.5mm height).
  - Miniaturised: ~10 times less volume than traditional ½" + PreAmp solution
  - Minaturised cable + connector

- Acoustic Performance
  - Similar to our existing ½" + PreAmp solution.

Technical Background

Existing Prototype of a "Thick Film Microphone"

Redesign to give us a "Flat Microphone"

Patent Pending Technology
Coming Within Q1 2004

The worlds first microphone dedicated to surface measurements
B&K's first DeltaTron microphone
New business in a new market

A new platform for microphones
A strong patent application challenges

4948 Tentative Specifications (Aerospace Version)

- ½" diameter 2.5 mm height
- Titanium housing
- Pre-polarized
- Pressure response calibrated
- Sensitivity – 57 dB re 1V/Pa +/− 2 dB
- Frequency range 5 Hz – 20 kHz +/− 2 dB
  - 10 Hz – 10 kHz +/− 1 dB
- Temperature Coef. 0.01...0.016 dB/deg. C
- LT stability < 0.1 dB/year @ 25 deg. C
- Capacitance 15 pF
- Inherent noise < 60 dB A, (depends on preampl.)
- Max SPL @ 3 % distortion: Typ. 160 dB

DeltaTron output
CIC and TEDS
2 microdot connectors

Sample Autoversion
Windtunnel Testing Automotive

**Surface Microphone**
True pressure analysis over a wide frequency range

Surface microphones can improve windtunnel test

---

**Conclusion**

- The new surface microphone technology will open new application areas in
  - Aerospace flight testing
  - Aerospace wind tunnel testing

- Automotive
  - Wind tunnel testing
  - Full scale measurements

- New production possibilities
  - Possible to realize different microphone types using the same microphone unit
    (savings in production cost)