RION

A Guide
to Sound & Vibration
Measuring Instruments

RION CO., LTD.
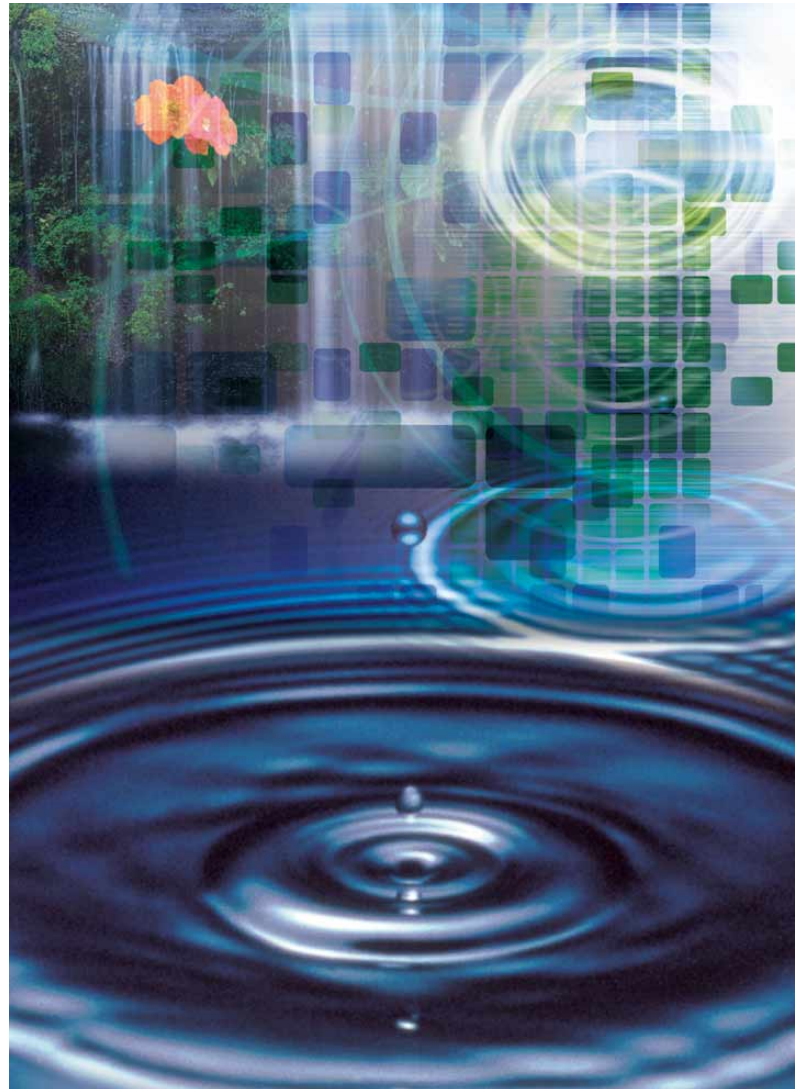
All RION's activities reflect a tradition of excellence

Company Profile

Kobayasi Institute of Physical Research

With breakthroughs in both pure research and practical applications, the Kobayasi Institute of Physical Research has made significant contributions to the betterment of our environment.

Simulation models create realistic situations for practical research.

The Kobayasi Institute of Physical Research, with which RION is affiliated, was founded in 1940 as a Ministry of Education-approved scientific research organization intended to advance our knowledge of basic and applied physics.

With professors from Japan's most prestigious universities among its directors, the Institute has become the world's foremost acoustics research center. Its measurement results and other accomplishments have won acclaim from the international community of scholars. Today the Institute's facilities include six reverberation chambers of various sizes, three anechoic chambers, a low-frequency experiment room and an aerodynamic noise experiment facility, among others.

The Institute is comprised of five divisions: Sound & Vibration Division, Architectural Division, Physics Division, Piezo-electric Division and Hearing Aid Division.

RION Co., Ltd. was established in 1944 as an affiliate of physics and acoustics pioneer, Kobayasi Institute of Physical Research. In the more than five decades since, RION has made a continuous stream of contributions to the world's store of beneficial technologies.

Simply stated, our business is to seek the solution of environmental problems on the earth.

RION Sound & Vibration measuring instruments are contributing to the control and elimination of pollution, and to maintenance of both human and machinery health by determining noise and vibration levels. In addition. one of our major product lines include hearing aids and a variety of medical and training equipment to help hearing impaired people lead normal lives.

In the years to come, RION will continue its search for new technologies and applications to help mankind create a better environment and life.

We provide our engineers with the latest technology in the most modern facilities to ensure the highest quality R & D.

RION Products in Other Fields

Particle Counters
Airborne particle counters and liquid-borne particle counters.

Hearing Instruments
Hearing Instruments to be worn on the body, behind the ear or in the ear, custom-designed hearing instruments for in-the-ear wear, and hearing instruments built in eyeglasses.

Medical Equipment
Audiometers, impedance audiometers, phono-laryngographs, electoro-nystagmo-graphs, and rhino-conductance meters.

Speech Therapy Equipment & Auditory Trainers
Electro-palatographs, pitch extractors, group hearing aids, auditory trainers, and FM hearing aids.

Others
Seismometers, anemometers, viscotesters, electrostatic field meters, and engine measuring instruments.

The rapidly expanding array of RION products in adding up to a better world for all of us

Sound and Vibration Measuring Instruments

Sounds and vibrations enter every aspect of our daily lives. Some, like music and verbal communication, soothe and relax us; others, such as the noise and vibration from traffic or machinery, can threaten our well being.

RION's concern takes in all manner of sound and vibration. Our activities extend from measuring reverberation time in concert halls and testing the soundproofing characteristics of housing materials to the control and maintenance of machine noise and vibration levels.
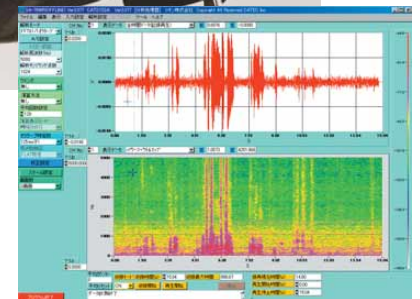
The RION lineup affords a full line of easy-to-handle measuring, recording and analysing equipment with innumerable applications for monitoring and maintaining a comfortable environment. Recent achievements in this field include revolutionary new equipment allowing visual identification of the strength and direction of sounds or vibrations.
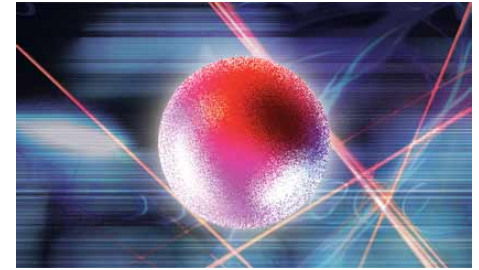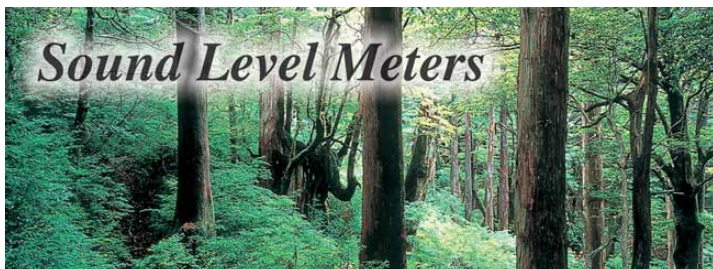

RION products achieve superior reliability through the application of advanced technologies, Examples include the use of lasers to calibrate accelerometers and to act as sensors for particle counters.

Absolute calibration of vibration pickups by laser ensures high accuracy for accelerometers. Rion also cooperates with research organizations worldwide in carrying out standard controls.

Sound Level Meters

Program cards (used for NL-32/22) NX-22J, NX-22RT, NX-22FT

NX-22J: Sound Monitor Card/ Audio Recording Card
NX-22RT: 1/1, 1/3 Octave RTA Card
NX-22FT: FFT Card

These program cards are not available to use for NL-20/21/31

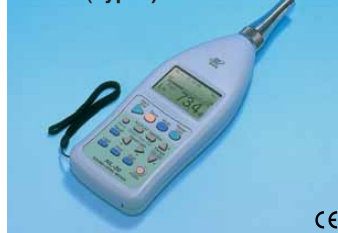## Program cards (used for NL-32/22/31/21) NX-21SA, NX-21VA

NX-21SA: 1/1, 1/3 Octave Filter Card
NX-21VA: Universal Filter Card

These program cards are not available to use for NL-20

Class1 (Type1)

NL-32 Sound Level Meter

Applicable standard: IEC 60651:1979 Type 1, IEC 60804: 2000 Type 1, IEC 61672-1 Class 1
Measurement function: L_p, L_{eq}, L_E, L_{max}, L_{min}, L_N, L_{peak}, L_{Cpeak}, L_{AI}, L_{Aleq}, L_{Ceq} and L_{ATm5}
Data store: Manual 100 data sets, Auto store 1 and 2, memory card slot up to 200 hours worth of L_A values sampled every 100 ms.
Battery life: 24h with alkaline batteries
5 kind of optional program cards (NX-series) available

CE, PTB

Class1 (Type1)

NL-31 Sound Level Meter

Applicable standard: IEC 60651:1979 Type 1, IEC 60804: 2000 Type 1, IEC 61672-1 Class 1
Measurement function: L_p, L_{eq}, L_E, L_{max}, L_{min}, L_N, L_{peak}, L_{Cpeak}, L_{AI}, L_{Aleq}, L_{Ceq} and L_{ATm5}
Data store: Manual 100 data sets, Auto store 1 and 2, memory card slot up to 200 hours worth of L_A values sampled every 100 ms.
Battery life: 27h with alkaline batteries
Filter program card, either NX-21SA or NX-21VA, optional

CE, PTB

Class2 (Type2)

NL-20 Sound Level Meter

Applicable standard:
IEC 60651: 1979 Type 2 ,
IEC 60804: 2000 Type 2 ,
IEC 61672-1 Class 2
Measurement function: L_p, L_{eq}, L_E, L_{max} and L_N
Data store: Manual 100 data sets
Battery life: 34h with alkaline batteries

CE

Class2 (Type2)

NL-22 Sound Level Meter

Applicable standard: IEC 60651:1979 Type 2, IEC 60804: 2000 Type 2, IEC 61672-1 Class 2
Measurement function: L_p, L_{eq}, L_E, L_{max}, L_{min}, L_N, L_{peak}, L_{Cpeak}, L_{AI}, L_{Aleq}, L_{Ceq} and L_{ATm5}
Data store: Manual 100 data sets, Auto store 1 and 2, memory card slot up to 200 hours worth of L_A values sampled every 100 ms.
Battery life: 30h with alkaline batteries
5 kind of optional program cards (NX-series) available

CE

Type1

NA-27 Precision Sound Level Meter with 1/3 Oct. Band Real-time Analyzer

IEC 61672-1: 2000 Class 1
Real time 1/1 or 1/3 oct. band frequency analysis. 2000 data store for 1/3 oct. analyzed data of display.
Dual measurement.
L_p, L_{eq}, L_E, L_{max}, L_{min}, L_x, L_{peak} and L_{tm3}, L_{tm5}.
Various types of trigger.
Infrared data communication port.
Remote control with infrared ray.

CE, PTB

Class2 (Type2)

NL-21 Sound Level Meter

Applicable standard: IEC 60651:1979 Type 2, IEC 60804: 2000 Type 2, IEC 61672-1 Class 2
Measurement function: L_p, L_{eq}, L_E, L_{max}, L_{min}, L_N, L_{peak}, L_{Cpeak}, L_{AI}, L_{Aleq}, L_{Ceq} and L_{ATm5}
Data store: Manual 100 data sets, Auto store 1 and 2, memory card slot up to 200 hours worth of L_A values sampled every 100 ms.
Battery life: 32h with alkaline batteries
Filter program card, either NX-21SA or NX-21VA, optional

CE

NA-42 Sound Level Measuring Amplifier

Wide measuring range
Several microphones useable: UC-53A, UC-52, UC-34P, UC-29, UC-27, UC-31 with suitable preamplifiers and cables
Input: Switching power supply for a preamplifier, $\pm$ 12V or $\pm$ 45V.
Bias voltage for a microphone, 30/60/200 V
Frequency range: 1 Hz to 100 kHz

Vibration Meters

VA-11 Vibration Analyzer

Single channel FFT analyzer with 22 hours battery life. Simple operation using only 10 switches.
Simultaneous display of acceleration, velocity and displacement.
Compact flash memory card applicable. Internal memory holds up to 500 data sets.

VM-63A Vibration Meter

Accelerometer, preamplifier and display are installed in a pocket-size vibration meter.
Simply press the VM-63A against the object to be measured.
The digital measurement value can be captured making it easy to read.

VM-70 Multi Machine Checker

High and low ranges combined in one compact unit with temperature measurements function.
Ideal for any diagnosis/ measurements. Data Memory for up to 100 data sets.

VM-83 Vibration Meter

All vibration measurements acceleration, velocity and displacement.
For Piezoelectric and Servo accelerometers
DSP operation
Max and Peak hold
Battery operation 20h.
Signal outputs
High-pass and Low-pass filters

VM-82 Vibration Meter

Easy-to-use vibration meter for acceleration, velocity and displacement measurements in [m/s^2], [mm/s] and [mm].
Especially suited for routine maintenance and monitoring of rotational machines. Internal memory stores up to 1000 data.

UV-06A 2ch Charge Amplifier

Dual-channel charge amplifier in a slim case for multi-channel vibration measurement.
* Pull-down panel for setting of accelerometer sensitivity
* Velocity/ displacement values by integrating circuits

Sound & Vibration Multi-channel System

UN-04A Precision Sound Level Meter Unit

* General purpose instrument for sound level measurement and monitoring
* Wide range and battery operation available.
* IEC type 1.
* 30 mm width case, no rack required.
* Built-in RS-232-C interface.
* Option: Display unit UV-12A, Battery unit BP-07.

UV-05A Vibration Meter Unit

* Wide measuring range
* Battery operated for general purpose vibration measurements and monitoring.
* 30 mm width slim case design, no rack required.
* Built-in RS-232-C interface.
* Option: Display unit UV-12A, Battery unit BP-07.

UV-12A Display Unit

* Display and power supply unit for UV-05A/ UN-04A
* Up to ten of UV-05A/ UN-04A connectable
* Incorporating interface of GP-IB and RS-232-C.
* Five-digit number on measuring display
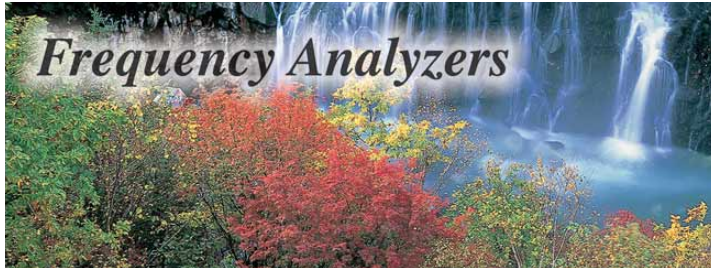
Frequency Analyzers

SA-30 1/3-Octave Band Real-time Analyzer
* SA-30 (2 ch)
* Frequency range: 0.5 Hz to 10 kHz (1/1 Oct.), 0.4 Hz to 20 kHz (1/3 Oct.)
* Portable with built-in printer and large color LCD
* ATA type memory card (PCMCIA)
* Infrared remote control

SA-78 2ch Signal Analyzer
Hand-held, battery operated 2ch FFT analyzer.
Frequency range:
DC to 80 kHz up to 1601 lines.
Designed for quality control, machine fault detection and diagnosis or sound and vibration analysis in the field.
Direct input for microphone or accelerometer with preamplifier.

Level Recorders

LR-07 Level Recorder
Records sound level, vibration level and DC voltage. External control is possible for pen, paper feed and marker functions. Operates in sync with level processing equipment.

Optional Equipment

NC-72 Pistonphone
IEC 60942: 1988 Class 0L
Portable sound source for calibration of sound level meters and sound measuring system.
Sound pressure level: 114 dB $\pm$ 0.2 dB
Frequency: 250 Hz $\pm$ 1 %

NC-73 Acoustic Calibrator
Pocket-size, battery-driven instrument for calibration of sound level meters.
Sound pressure level: 94 dB $\pm$ 0.5 dB
Frequency: 1 000 Hz $\pm$ 2 %
IEC 60942 Class 2

NC-74 Sound Calibrator
IEC 60942: 1997 Class 1
Sound pressure level: 94 dB $\pm$ 0.3 dB
Frequency: 1 000Hz $\pm$ 2 %
For Type 1 and Type 2 sound level meters.

PTB

VE-10 Calibration Exciter
Handy vibration source for calibration of vibration meters and accelerometers.
Acceleration: 10 m/s^2 (RMS),
Velocity: 10 mm/s (RMS),
Displacement:10 μm
(RMS). Frequency: 159.2 Hz.

DPU-414 Printer
High-speed printing (52.5 cps)
Dual powers supply configuration (AC adapter and rechargeable battery) ; 3000 character lines at full charge.
Dual interface configuration (8-bit parallel and RS-232-C serial)