



**A**  
***New Generation***  
***Sound Level Meter***  
***NA-27***



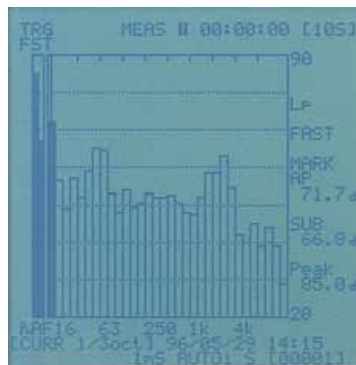
*Precision Integrating Sound Level Meter  
with 1/3 octave band real-time analyzer*

## Tremendous versatility

- Measurement modes:  $L_p$ ,  $L_{eq}$ ,  $L_E$ ,  $L_{max}$ ,  $L_{min}$ ,  $L_{peak}$ ,  $L_x$ , Impulse,  $L_{tm3}$ ,  $L_{tm5}$ , P\_AVE, P\_SUM and REVERB
- Dual measurement
- Real-time 1/1-octave and 1/3-octave analysis
- Infrared rays data communication
- 8-hour continuous operation with alkaline batteries
- Memory max. 10000 data capacity
- Various trigger functions (external trigger, level trigger and time trigger)
- Data exclusion (back-erase) function
- Time delay setting function
- Back up function
- Large display with backlighting

## 1/1 and 1/3 octave analysis

The NA-27 is a compact and eminently portable unit that allows real-time 1/1-octave and 1/3-octave analysis without requiring external accessories. Being able to perform quick and precise 1/3-octave analysis in the field is an advantage that will be appreciated by researchers and scientists anywhere. During measurement, the user can switch between 1/1-octave, 1/3-octave, and noise level analysis, as well as between numeric and graphical indication at the simple touch of a key.



1/3 octave band analysis, graphic display



1/3 octave band analysis, numerical display

## Infrared rays data communication

Cordless data communication & remote control

Optical port: This port allows sending measurement data over an infrared link to a computer equipped with a suitable infrared port without any cable.



Infrared sensor and serial I/O terminal: The signals from the infrared remote control are received here. The operation range of the remote control is 3 meters.

## Output data from NA-27

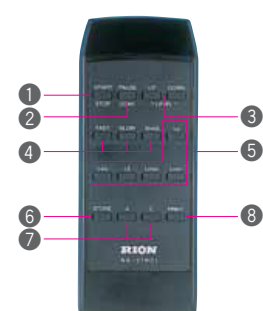
Output data from NA-27 can take two basic formats, ASCII format and binary format, depending the commands sent from PC.



Infrared remote control:

The supplied infrared remote control allows operation of 18 functions including START/STOP from a distance. Available functions by the remote control are;

- 1 START/STOP
- 2 PAUSE/CONT
- 3 LEVEL UP/DOWN
- 4 FAST, SLOW, 10mS
- 5  $L_p$ ,  $L_{eq}$ ,  $L_E$ ,  $L_{max}$ ,  $L_{min}$
- 6 STORE
- 7 A, C
- 8 PRINT

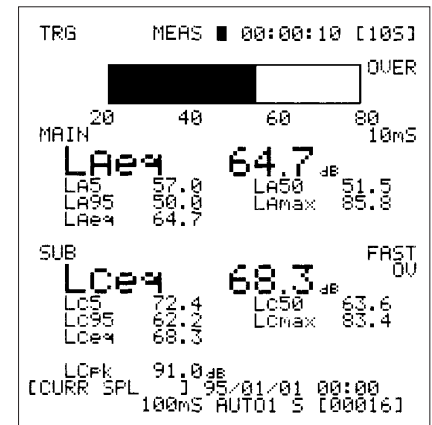


## Dual measurement

For noise evaluation, it will be sometimes desirable to check the peak sound pressure or to weigh transient levels with a suitable time constant. NA-27 perfectly fulfills these requirements incorporating two separate sound level measurement channels which can operate simultaneously, using different settings for frequency response and time weighting.

Measurement results are shown on independent readouts in the display, and the data can also be output separately to other equipment for later frequency analysis.

\*Splitter adapter CC-59 is required for simultaneous output of main and sub channel signal.

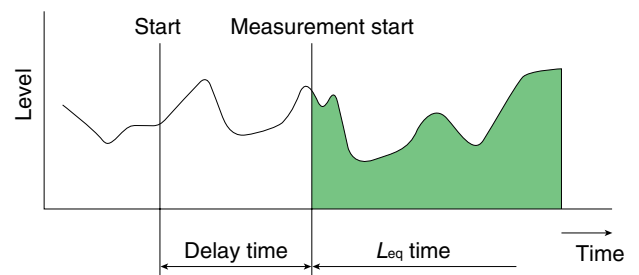


## P\_AVE, P\_SUM and REVERB

Using recall processing function, power average (P\_AVE), power sum (P\_SUM) and reverberation time (REVERB) can be calculated easily. All you have to do is just to store data before recall processing.

## Delayed measurement

The user can set a delay to be inserted after activating measurement before actual processing starts.



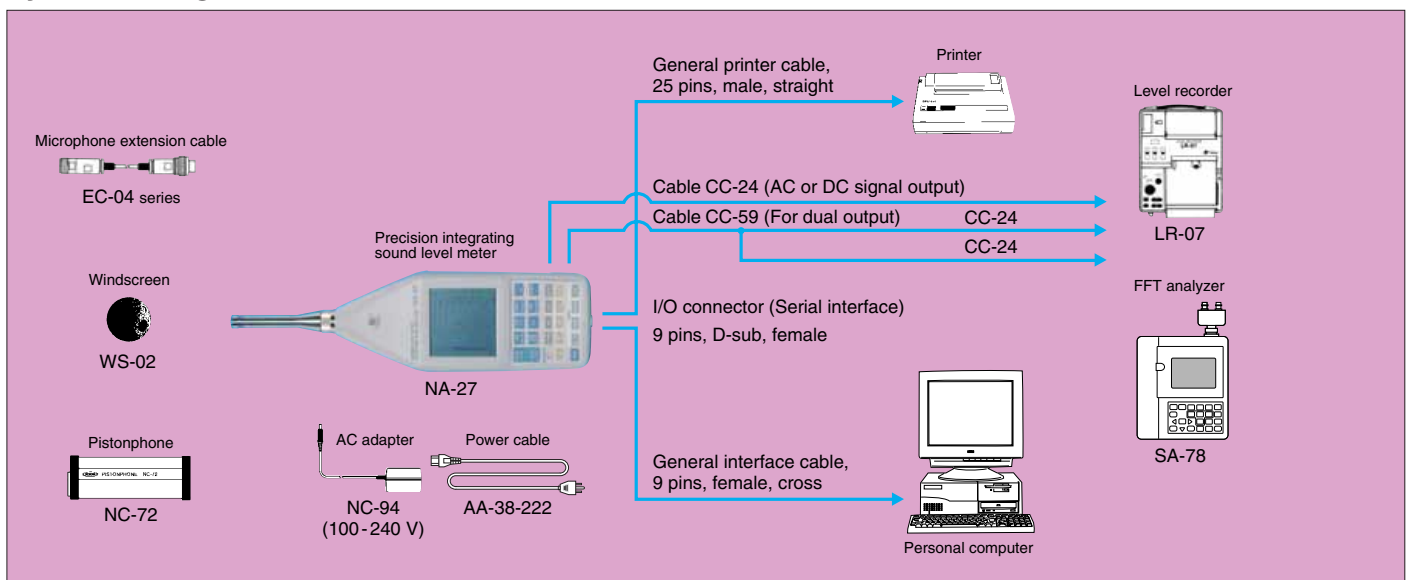
## Optional equipment

AC adapter	NC-94 (100-240V)
Soft case	NA-27-026
Microphone extension cable	EC-04 series (2, 5, 10, 30, 50, 100 m)
BNC-to-pin cable	CC-24
Splitter adapter	CC-59
Pistonphone	NC-72
Printer	CP-11
Level recorder	LR-04, LR-06

## Data exclusion (back-erase) function:

Data that were gathered a few seconds before the pause key was pressed can be excluded from processing.

## System configuration



# Specifications

## Applicable standards

IEC 60651: 1979 Type 1, IEC 60804: 2000 Type 1, JIS C 1505-1988,  
IEC 61672-1: 2002 Class 1, ANSI S1.11 Type 1D, IEC 61260: 1995  
Class 1, JIS C 1513: 2002 Class 1, JIS C 1514: 2002 Class 1

## Microphone and preamplifier

1/2-inch prepolarized condenser microphone UC-53A and  
preamplifier NH-20

## Dual Measurement and real-time frequency analysis

Main and sub  
Individual frequency weighting and time weighting settings are  
possible for main and sub channels.  
1/1, or 1/3 octave band real-time frequency analysis capability in  
main channel

## Measurement functions

Instantaneous sound pressure level ( $L_p$ )  
Equivalent continuous sound pressure level ( $L_{eq}$ )  
Sound exposure level ( $L_E$ )  
Maximum and minimum sound pressure level ( $L_{max}$  and  $L_{min}$ )  
Percentile sound pressure level (5 values selectable from  $L_1$ ,  $L_5$ ,  
 $L_{10}$ ,  $L_{50}$ ,  $L_{90}$ ,  $L_{95}$ ,  $L_{99}$ )  
Takt-max sound pressure level ( $L_{tm3}$ ,  $L_{tm5}$ )\*  
Waveform peak hold ( $L_{peak}$ )\*  
\*sub channel only

## Measurement time (except for instantaneous sound pressure level $L_p$ )

Presetting from 1 to 99 (units: h, m, s)  
Manual measurement by start and stop (max. 99 h)  
 $L_x$  requires more than 10 s setting.

## Max. measurement level

140 dB rms, 133 dB at c.f.3, 143 dB peak for peak hold

## Noise floor

Typical 17 dB (A) rms

## Frequency range

20 - 12500 Hz (including microphone)  
10 - 20000 Hz (electrical characteristics)

## Frequency weighting

A, C, Flat (main and sub channels)

## Time weighting

Main channel: Fast, Slow, 35 ms, 10 ms  
Sub channel: Fast, Slow, 35 ms, 10 ms, Impulse, Peak hold

## Display

Backlit LCD panel (192×192 dots)  
Sound level meter display  
Numerical: 4 digits, update cycle 1 s, resolution 0.1 dB  
Bar graph\*: Scale range 60 dB in 0.5-dB steps, update cycle 0.1 s  
Analyzer display  
Numerical: 4 digits, update cycle 1 s, resolution 0.1 dB  
Bar graph\*: Scale range 70 dB in 0.5-dB steps, update cycle 0.1 s  
Level-time: Min. 120 address, Max. all address  
\*main channel only  
Real time clock: Year, Month, Day, Hour, Minute, Second

## Level range

Sound level meter mode (Display range: 60 dB)  
7 ranges in 10-dB steps: 20 - 80, 30 - 90, 40 - 100, 50 - 110,  
60 - 120, 70 - 130, 80 - 140 dB

Analyzer mode (Display range: 70 dB)  
7 ranges in 10-dB steps: 10 - 80, 20 - 90, 30 - 100, 40 - 110,  
50 - 120, 60 - 130, 70 - 140 dB

## Memory

Manual and auto store modes for instantaneous values and  
processing results  
1 block for manual store mode, 2 block for auto store mode  
Manual : all measurement data to be stored  
Capacity: 200 data  
Auto:  
Single store: Selected data to be stored continuously  
Capacity: 10000 data (sound level meter mode)  
4000 data (1/1 oct. analysis)  
2000 data (1/3 oct. analysis)  
Group store: All measurement data to be stored continuously  
Capacity: 200 group data

## Trigger function

Trigger source: Input signal, External signal, Time data

## Time delay function

Processing start can be delayed by 1 to 10 s

## Pause function

Normal pause function and back-erase function to delete data  
acquired 1 to 5 s before

## Infrared rays communication

Data transmission with a PC  
Remote control by an infrared rays controller (NA27RC1)

## Printout function (Optional printer CP-10, CP-11)

Single mode: One current data on screen or one data stored  
on memory  
Successive mode: Successive data at designated address area

## Signal output

AC output (for main and sub channels)  
DC output (for one channel only, selected by menu)  
External trigger input  
Serial Interface: RS-232-C, 9 pin D-sub  
Infrared rays data transmission: Max. 50 cm  
Infrared rays remote control: Max. 3 m

## Power requirements

4 to 6 V DC, approx. 320 mA (at 5 V, 1/3 oct analysis mode, 20°C)  
Battery: Four IEC R14P (size "C") batteries  
Life: Approx. 8 h (alkaline batteries, continuous operation,  
1/3 oct. analysis)  
AC adapter: AC adapter NC-94, 100 to 240 V (option)  
Power cable: AA-38-222 (option)

## Ambient conditions for operation

-10 to +50°C, 30 to 90% RH

## Dimensions, weight

Approx. 30 (H) × 10 (W) × 5 (D) cm, approx. 800 g (including  
batteries)

## Supplied accessories

Windscreen × 1, Carrying case × 1, Tripod adapter × 1,  
IEC R6 batteries × 4, Lithium battery CR-1/3N × 1  
Remote controller × 1, Miniature screwdriver × 1  
Instruction manual × 1

Specifications subject to change without notice.



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