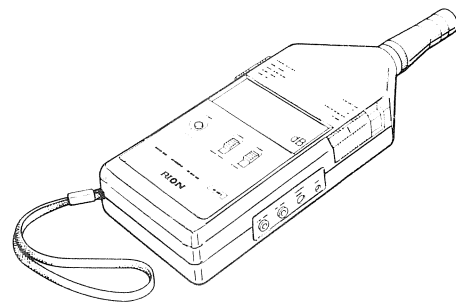


# INSTRUCTION MANUAL

SOUND LEVEL METER  
NA-24



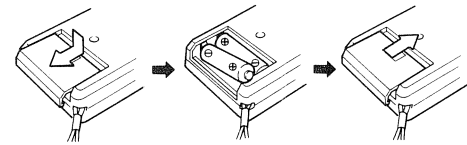
**RION CO., LTD.**

3-20-41 Higashimotomachi, Kokubunji, Tokyo 185 Japan

No.11433 98-02

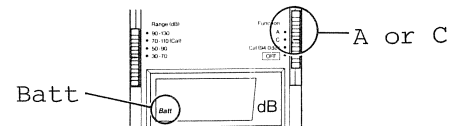
## PREPARATIONS

### Inserting Batteries



Observe correct (+) (-) polarity.

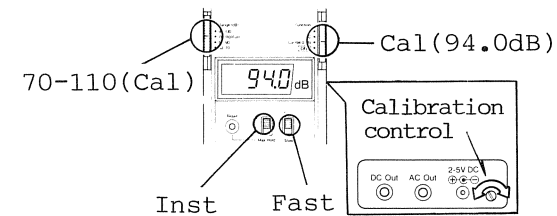
### Replacing Batteries



When **Batt** is shown on the display, the batteries should be replaced with new ones. Always replace both batteries at the same time.

- **Batt** is shown when the battery voltage has dropped to 1.9 V.
- The unit can be operated continuously for about 20 hours with manganese IEC R6 (size AA) batteries.
- If the unit is not to be used for an extended period of time, remove the batteries.

### Calibration

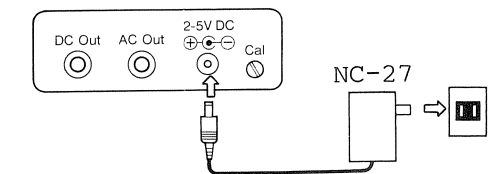


Adjust the calibration control to obtain a reading of 94.0 dB.

The calibration uses a sine wave signal of 1000 Hz generated by a built-in oscillator.

This signal can also be used as reference signal for calibration of a connected frequency analyzer or level recorder.

### Connection of AC Adapter NC-27 (option)



When the AC adapter is connected, the power for the unit is automatically drawn from the adapter, also if batteries are inserted.

**Never** use any other adapter besides the NC-27.

**CE**

The product described in this manual is in conformity with the following European standards;

EN 50081-1 (1992) Electromagnetic compatibility  
- Generic emission standard

EN 50082-1 (1992) Electromagnetic compatibility  
- Generic immunity standard

Note: The use of AC or DC output cable in a RFE field may cause some disturbance in the measurement results.

## PRECAUTIONS

### Do not drop the unit

The NA-24 must be protected from shocks and vibration as it is a precision instrument.

### Protect from moisture and rain

The microphone in particular must be protected from exposure to water or dust. The unit should also not be stored in locations with high temperatures or humidity.

### Use the carrying case

Dust or contamination can alter the performance characteristics of the unit. Always replace the unit in its carrying case when not in use.

### Do not touch the microphone

The microphone cover at the tip of the unit is not designed to be removed. Do not try to disengage the cover. Cleaning the microphone is not advisable.

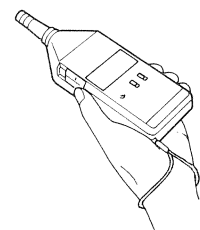
### For repair, contact the supplier

In case of malfunction, do not attempt any repairs by yourself. Clearly note the condition of the unit and contact the supplier.

## STRAP AND TRIPOD MOUNTING SCREW

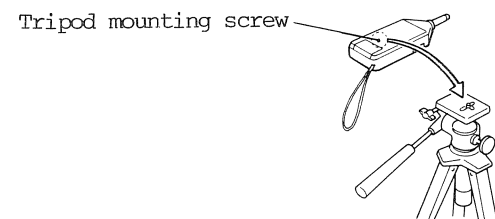
### Strap

The strap helps to prevent accidental dropping of the unit. The unit should always be held as shown below.



### Tripod Mounting Screw

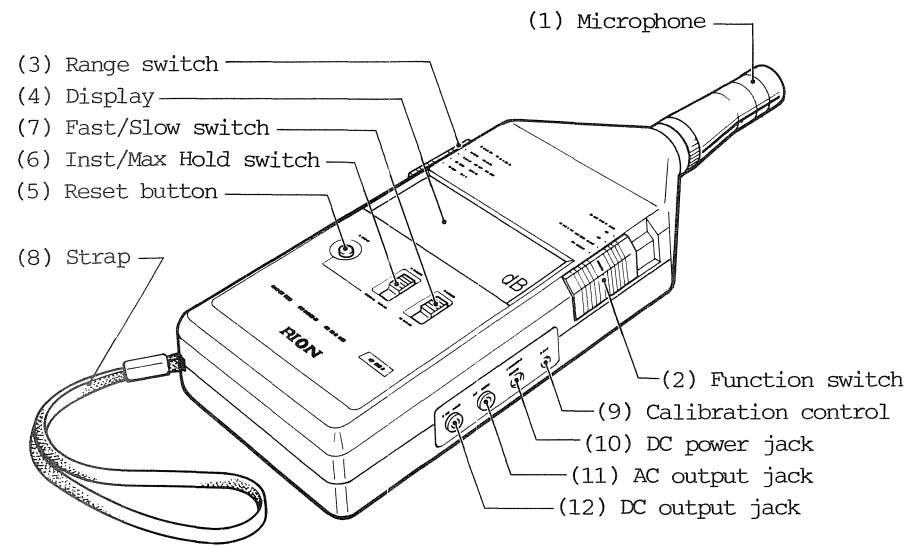
For long-term measurements, the unit can be mounted on a tripod. Use the tripod mounting screw provided on the bottom of the unit.



## SPECIFICATIONS

Applicable standard	IEC 651 Type 2	Dynamic characteristics	Fast and slow
Measurement range	30 to 130 dB	Calibration	Electrical calibration with 1000-Hz sine wave signal from built-in oscillator
Frequency range	20 to 8000 Hz	Outputs	AC: Approx. 1 V <sub>rms</sub> at full scale, Impedance 600 Ω DC (log-converted): 2.0 V at full scale, Impedance 50 Ω
Frequency weightings	A and C characteristics		
Microphone	1/2" electret (prepolarized) condenser microphone UC-52 Sensitivity: -33 dB	Power	Two IEC R6 batteries or AC adapter NC-27 (option)
Rectifier	True-RMS, Accuracy: ±0.2 dB at CF2, ±0.5 dB at CF3	Battery life	Approx. 20 hours with manganese batteries
Display	4-digit LCD, Resolution: 0.1 dB	Ambient conditions for operation	-10 to +50°C 10 to 90%RH
Indication range	40 dB (30 to 70, 50 to 90, 70 to 110, 90 to 130 dB)	Dimensions	21.5(H) x 7.2(W) x 3.2(D) cm
Fluctuation in max. level hold function	±0.5 dB/min	Weight	Approx. 270 g
Warning indications	<b>Over</b> is shown when input is 8 dB over the range <b>Under</b> is shown when input is 1 dB under the range <b>Batt</b> is shown at battery voltage of 1.9 V	Supplied accessories	
		Windscreen WS-10	1 Carrying case 1
		R6 battery	2 Output cable 1
		Screw driver	1 Plug 1
		Instruction manual	1

## PARTS AND FUNCTIONS



### (1) Microphone

### (2) Function switch

A: A-weighting  
Cal (94.0dB): Calibration  
C: C-weighting  
OFF: Power off

### (3) Range switch

Serves to switch the measurement range.

### (4) Display

Serves to display the sound pressure level, over range, under range, and battery condition.

Sound pressure level: In dB with 0.1 dB resolution

Over: Shown when the range setting is relatively low to input level

Under: Shown when the range setting is relatively high to input level

Batt: Shown when the battery voltage has dropped to 1.9 V

### (5) Reset button

Serves to reset the maximum level indication.

### (6) Inst/Max Hold switch

Inst: Instantaneous level indication

Max Hold: Maximum level indication

### (7) Fast/Slow switch

Serves to switch the meter dynamic characteristics (fast/slow).

### (8) Strap

Use this strap to secure the unit when holding it in your hand.

### (9) Calibration control

Used for unit calibration.

### (10) DC power jack

Connect the AC adapter NC-27 to this jack.

### (11) AC output jack

Serves to supply AC signals to external equipment.

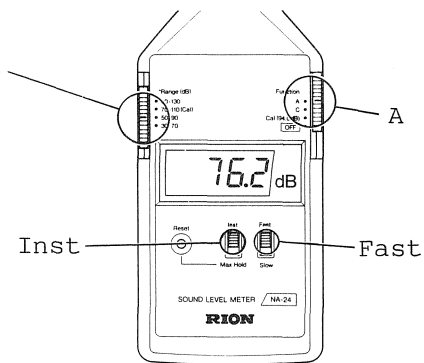
### (12) DC output jack

Serves to supply log-converted DC signals to external equipment.

## MEASUREMENT

### Setting Switches

Set to a suitable range

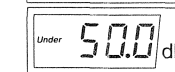
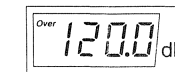
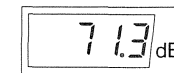


### Sound Pressure Level Indication

The indication is updated every one second.

If **Over** or **Under** is continuously shown, change the setting of the Range switch (3) to a suitable range.

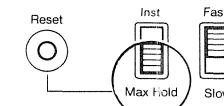
Immediately after the range was switched, a 20-dB higher or lower reading may appear momentarily; start reading the values from the subsequent indication.



### Maximum Level Hold (Inst/Max Hold switch)

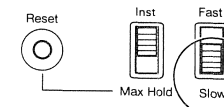
The Max Hold position is used to measure the maximum level of sounds. The maximum measured level is indicated continuously.

To reset the maximum level indication and enter the new measurement, press the Reset button (5).



### Slow Dynamic Characteristic (Fast/Slow switch)

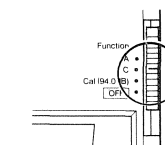
The Slow position is used for measurement of sound with little temporary fluctuation.



### C-Weighting (Function switch)

Regular measurements are carried out in the A position.

By comparing A reading with C reading, frequency components of the sound can be estimated; larger difference between A and C readings shows more components in low frequencies.



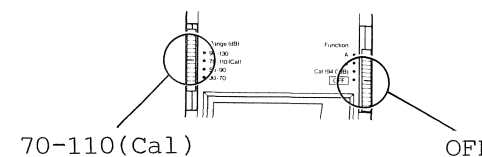
### Output Jacks

AC output jack: Supplies AC signals (approx. 1 Vrms at full scale)

DC output jack: Supplies log-converted DC signals (2 V at full scale)

### Terminating Measurement

Always switch the unit off after use.



## NOTES ON MEASUREMENT

### Background Noise

If the level difference between the absence and presence of the sound to be measured is 10 dB or more, the influence of background noise may be disregarded. If the difference is less, a compensation as shown below should be applied.

Level difference (dB)	4 to 5	6 to 9
Compensation value (dB)	-2	-1

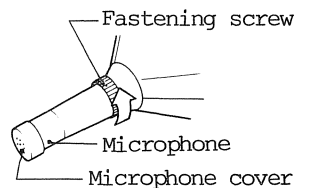
### Reflection

The microphone should be placed well away from reflective surfaces such as walls or the floor, in order to eliminate errors due to reflections. When hand-holding the unit, do not hold it too close to your body.

### Precision Measurement

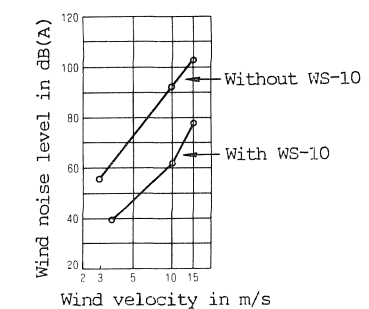
For high-precision measurements, the microphone should be removed from the unit and mounted on a tripod to eliminate the influence of reflections. Use the optional extension cable for connection of the microphone.

Loosen the fastening screw to remove the microphone. Take care not to drop the microphone.



### Windscreen

Strong wind striking the microphone can cause misreadings. For measurements in windy locations, the windscreen WS-10 should be used.



Wind noise reduction effect of WS-10

