

# RION

OPERATION MANUAL  
for  
Precision Sound Level Meter  
Model NA-56

## OPERATION MANUAL

for

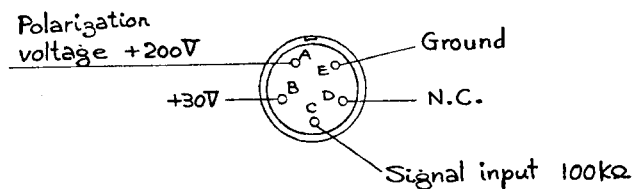
### NA-56 Precision Sound Level Meter

The RION NA-56 is designed to the specifications of IEC Publication 179 "Precision Sound Level Meter".

#### 1. Function of controls

##### ① Input connector

5-pin connector for the connection of microphone. The input impedance is 100 k-ohm.



##### ② Amplifier gain adjustment

A screwdriver operated potentiometer controlling the gain of the input amplifier, used for matching the amplification of the meter to the sensitivity of the microphone.

##### ③ Output amplifier attenuator (inside knob)

Controls the gain of the input amplifier. To protect the output amplifier against overload and to ensure to the optimum signal to noise ratio. The inside knob should be kept at its fully clockwise limit as possible.

##### ④ Input amplifier attenuator (outside knob)

Controls the gain of the input amplifier. Used together with the ③ output amplifier attenuator to select the measuring range of the meter.

##### ⑤ Power switch

##### ⑥ Pilot light

The light flashes when the ⑤ power switch is switched on.

⑦ Battery check switch

Push it, a meter scale deflection should be obtained. If the deflection is below the area of the "BATT" scale, replace the batteries with fresh ones.

⑧ Meter characteristic switch

"FAST" Provides the "FAST" meter characteristic specified in IEC Publication 179.

"SLOW" Provides the "SLOW" meter characteristic specified in IEC Publication 179.

⑨ Output

The output voltage of the output amplifier is fed to this terminals. Load impedance should be greater than 10 k-ohm. An output voltage of 2 V (RMS) corresponds to the full meter deflection.

⑩ Meter

⑪ Weighting network switch

In position "FLAT", the instrument has flat frequency response from 20 Hz to 12,500 Hz. In positions "A", "B", and "C" the appropriate frequency weighting network is switched in.

⑫ Battery cavity.

⑬ Lock

locks the battery cavity lid.

⑭ External power input

Provided for connection of the AC adaptor to power the NA-56.

⑮ Screw for tripod mounting

⑯ Condenser microphone

⑰ Preamplifier

⑱ Flexible rod

## 2. Calibration for sound measurements

(Using the built in reference voltage)

1. Fit the instrument with the plug-in input connector, extension rod and microphone.
2. Push (7) battery check switch and check the condition of the batteries.
3. Set (8) meter characteristic switch to "FAST", (11) weighting network switch to "FLAT", and (3) and (4) attenuators to "CAL".
4. From the calibration chart of the microphone in use, determine its open circuit sensitivity in dB.
5. Using a small screwdriver, adjust (2) amplifier gain adjustment until the open circuit sensitivity of the microphone in use is correctly indicated on the red microphone sensitivity scale of the meter.

## 3. Measurement of sound level

1. Calibrate the instrument.
2. Hold the instrument steadily but as far away from the body as possible with the microphone directed towards the measuring object.
3. Set (11) weighting network switch to "FLAT" and select the required function of (8) meter characteristics switch.
4. With (3) output amplifier attenuator (inside attenuator) knob its fully clockwise position, turn (4) input amplifier attenuator (outside attenuator) knob until the meter deflection. If this is not possible, (3) inside knob may also be used. (3) inside knob should be kept as far clockwise as possible. The optimum signal to noise ratio is thus obtained.
5. Select the required weighting network by (11) weighting network switch.
6. If the meter indicates less than "0 dB", increase sensitivity by (3) inside attenuator knob.
7. The measured sound level or sound pressure level is the sum of

the meter reading and the number which appears in the hole on the inside attenuator knob.

#### 4. Replacement of batteries

Open the cover by moving lock, insert the batteries and then close the cover at the rear of the instrument.

Pay careful attention to polarity when inserting the batteries.

## 5. Specifications

1. Applicable standard : IEC Publication 179
2. Microphone : One inch type condenser microphone
- Sensitivity : Approx. -45 dB (0 dB = 1 V/ $\mu$ bar)
- Capacity : Approx. 60 pF (1000 Hz, polarization voltage 200 V)
- Freq. range : 20 Hz ~ 12,500 Hz

### 3. Measurement range

- A-weighting : 25 ~ 130 dB
- B-weighting : 25 ~ 130 dB
- C-weighting : 30 ~ 130 dB
- Flat : 40 ~ 130 dB

(The measured value in A, B and C weightings cannot be reliable if the level is over 130 dB in Flat response.)

### 4. Frequency response

"A", "B", and "C" weighted response (including microphone) in accordance with IEC Publication 179.

Amplifier frequency response in "Flat" : 20 Hz ~ 20 kHz  $\pm$  1 dB

### 5. Attenuators

- Input amplifier attenuator : 50 dB, 10 dB step
- Output amplifier attenuator : 40 dB, 10 dB step

### 6. Meter indication

- Full wave RMS detection
- Dynamic characteristics : Fast and Slow in accordance with IEC Publication 179
- Meter scale : -5 dB ~ +10 dB

### 7. Calibration

Electrical calibration by built in oscillator

- Frequency : Approx.        Hz
- Microphone sensitivity range : -44 ~ -51 dB (0 dB = 1 V/ $\mu$ bar)

## 8. Output

Output voltage : Approx. 1 V (RMS) at meter full scale  
Load impedance : 10 k-ohm or greater

9. Power supply : 3 x 1.5 volt flash-light cells (type R20  
in IEC Publication 86-2)

8 hours battery life for normal operation

10. Operating temperature :  $-10^{\circ}\text{C} \sim +50^{\circ}\text{C}$

## 11. Dimensions

Length : Approx. 58 cm including flexible  
extension rod and microphone

Approx. 28 cm with input stage  
(instrument itself)

Width : Approx. 11 cm

Height : Approx. 10 cm

12. Weight : Approx. 2.5 kg (including batteries)

## 13. Accessories

1" microphone (UC-11A)	1
Pre-amplifier (NC-20C)	1
Flexible extension rod (NC-43)	1
Windscreen (NC-80)	1
Carrying bag	1

