INSTRUCTION MANUAL

Multi-Function Environment Meter

4 IN 1

SOUND LEVEL

LIGHT

HUMIDITY

TEMPERATURE

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1. INTRODUCTION

The 4 in 1 digital multi- Multi-Function Environment Meter has been designed to combine the functions of Sound Level Meter, Light Meter, Humidity Meter, Temperature Meter .

It is an ideal Multi-Function Environment Meter Instrument with scores of practical applications for professional and home use.

The Sound Level function can be used to measure noise in factories, schools, offices, airports, home, etc., checking acoustics of studios, auditoriums and hi-fi installations.

The Light function is used to measure illuminance in the field. It is fully cosine corrected for the angular incidence of light. The light sensitive component used in the meter is a very Stable, long life silicon diode.

The Humidity/Temperature is for use a humidity/semiconductor sensor and K type thermocouple. This operations manual contains general information and specification

2. FEATURES

- 4 functions measure Sound level, Light, Humidity, Temperature.
- 3 1/2 large LCD display with units of Lux, °C, %RH and dB indication.
- Easy to use with single function switch operating, pocket size and light weight.
- Sound level measures from 35dB to 100dB for A , C weighting checking with 0.1dB resolution.
- Light measuring levers ranging from 0.01 lux to 20,000 lux.
- Humidity measurement from 25%RH to 95%RH with 0.1%RH resolution and fast time response.

3. SPECIFICATIONS

Display: 1999 counts LCD display with function of Lux, °C, %RH and dB indication.

Polarity: Automatic, (-) negative polarity indication.

Over-range: "OL" mark indication.

Low battery indication: The "BAT" is displayed when the battery voltage drops below the operating level.

Measurement rate: 1.5 times per second, nominal.

Storage temperature: -10 ^{O}C to 60 ^{O}C (14 ^{0}F to 140 ^{0}F) at < 80 % relative humidity

Auto Power Off : Meter automatically shuts down after approx .10 minutes of inactivity.

Power: One standard 9V, NEDA1604 or 6F22 battery.

Dimensions: 121.5 (H) x 60.6 (W) x 40 (D) mm

Weight: Approx.: 280g including holster.

Sound Level

Measurement range: 35-100dB

Resolution: 0.1dB

Typical instrument frequency range: 30Hz-10KHz

Frequency Weighting: A ,C –weighting

Time Weighting: Fast

Accuracy: ±3.5 dB at 94 dB sound level, 1KHZ sine wave.

Microphone: Electric condenser microphone.

Light

Measuring Range:20, 200, 2000, 20,000lux (20,000lux range reading x10)

Overrate Display: Highest digit of "1" is displayed.

Accuracy: ±5% rdg + 10 dgts (calibrated to standard incandescent lamp at color temperature 2856 k) .

Repeatability: ± 2%.

Temperature Characteristic: ±0.1% / ℃.

Photo detector: One silicon photo diode with filter.

Humidity/Temperature

Measurement Range:

Humidity 25%~95%RH

Temperature -20℃-+200℃ , -20℃-+1300℃ ,

Resolution : 0.1% RH, 0.1℃, 1.0℃ .

Accuracy (after calibration):

Humidity: ± 5%RH (at 25℃ , 35%～95% RH).

Response time of the humidity sensor: approx. 6 min.

Temperature: ±3%rdg ± 1℃ (at -20℃~+200℃)

±3.5%rdg ± 2℃ (at -20℃~+1300℃)

Input Protection: 60V dc or 24V ac rms.

4. PANEL DESCRIPTION

1. LCD display: 3 1/2 digits LCD display with units of Lux, x10 Lux, °C, %RH, dB and low battery "BAT" indication.
2. Power / Function / Range Switch: Turn power on (or off) and select measurement function and ranges.
3. Microphone: Electric condenser microphone inside.
4. Photo Detector: Long life silicon photo diode inside.
5. Humidity & Temperature: Humidity Sensor and Semiconductor Sensor inside.
6. Temperature Terminal : Insert the temperature probe in this terminal.

5. OPERATING INSTRUCTION

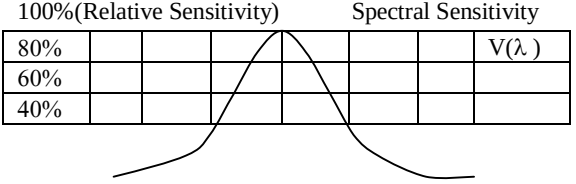
Measuring Sound Level

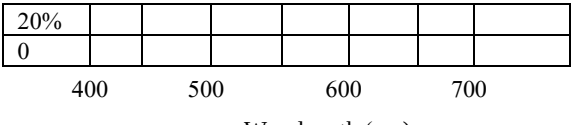
1. Turn the Power/function/range Switch to "dB" position.
2. Remove the meter and face the microphone to sound source in a horizontal position.
3. The A,C-weighting curve is nearly uniform over the frequency range from 30 to 10,000Hz, thus giving an indication of overall Sound level.
4. The Fast response is suitable to measure shout bursts and peak values from sound source.
5. The sound level will be displayed.

6. Note: Strong wind (over 10m/sec.) striking the microphone can cause misreading for measurement in windy locations, a windscreen should be used in front of microphone.

Measuring Light

1. Turn the Power/function/range Switch to select the “lux” scale and set the range to desired (“lux” or “x10 lux”) range.
2. Remove the meter and face the photo detector to light source in a horizontal position.
3. Read the illuminance nominal from the LCD display.
4. Over-range: If the instrument only display one “1” in the M.S.D. the input signal is too strong, and a higher range should be selected.
5. When the measurement is completed. Replace the photo detector from the light source.
6. Spectral sensitivity characteristic: To the detector, the applied photo diode with filters makes the spectral sensitivity characteristic almost meet C.I.E. (International Commission on Illumination) photopia curve V (λ) as the following chart described.





7. Recommended Illumination:Locations Lux*Office

Conference, Reception room.	200 ~ 750
Clerical work	700 ~ 1,500
Typing drafting	1000 ~ 2,000
*Factory	
Packing work, Entrance passage	150 ~ 300
Visual work at production line	300 ~ 750
Inspection work	750 ~ 1,500
Electronic parts assembly line	1500 ~ 3,000
*Hotel	
Public room, Cloakroom	100 ~ 200
Reception, Cashier	200 ~ 1,000
*Store	
Indoors Stairs Corridor	150 ~ 200
Show window, Packing table	750 ~ 1,500
Forefront of show window	1500 ~ 3,000
*Hospital	
Sickroom, Warehouse	100 ~ 200

Medical Examination room	300 ~ 750
Operating room	
Emergency Treatment	750 ~ 1,500
*School	
Auditorium, Indoor Gymnasium	100 ~ 300
Class room	200 ~ 750
Laboratory Library Drafting room	500 ~ 1,500

Measuring Humidity/Temperature

1. Humidity Measurement:

① Set the Power/function/range Switch to "%RH" position .

② Then the display will show the humidity reading value (%RH) directly.

③ When the tested environment humidity value changed. It need to a few minutes to get the stable "%RH" reading.

Warning:

Don't expose the humidity sensor to direct sunlight.

Don't touch or manipulate the humidity sensor.

2. Temperature Measurement:

① Set the Power/function/range Switch to "0.1℃ or 1℃ and 0.1℉ or 1 ℉" position.

② Then the display will show the environment temperature reading value (°C/℉) directly.

③Insert the temperature probe into the K-type thermocouple socket.

④ Touch the end of the temperature sensor to the area or surface of the object to be measured. The display will show the temperature reading value (°C/℉) directly.

Warning:

When function switch on temperature "0.1°C or 1°C and 0.1℉ or 1 ℉"range, Never attempt a voltage measurement with the test leads inserted into the the K-type thermocouple socket.

. You might be injured or damage the meter.

6. MAINTENANCE

Battery Replacement

If the sign "BAT" appears on the LCD display, it indicates that the battery should be replaced. Remove screws on the back cover and open the case. Replace the exhausted battery with new batteries. (1 x 9V battery NEDA 1604, 6F22 or equivalent)