

REED

Model ST-8820

Multi-Function
Environment Meter



Instruction Manual

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Features

- Anemometer, light meter, humidity meter and Type K thermometer in one
- Velocity Units: m/s, km/h, mph, knots, ft/min
- User selectable °C/°F, Lux/Ft-cd
- Data Hold, Record (Max/Min)
- Compact and lightweight
- Includes battery

For service on this or any other REED product or information on other REED products, contact REED Instruments at info@reedinstruments.com

Specifications

Display:	Large 1999 counts LCD display with function of Lux, x10 Lux, °C, °F, %RH & dB, A & dB, C & dB, Lo & dB, Hi & dB, MAX HOLD and DATA HOLD indications
Polarity:	Automatic (-) negative polarity indication
Over-range:	"OL" mark indication
Low battery indication:	"BAT" is displayed when the battery voltage drops below the operating level
Measurement rate:	1.5 times per second, nominal
Storage temperature:	-10°C to 60°C (14°F to 140°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/Weight:	251.0 (H) x 63.8 (W) x 40 (D) mm/250g

Sound Level

Measurement range:	A LO (low) - Weighting: 35-100 dB A HI (High) - Weighting: 65-130 dB C LO (low) - Weighting: 35-100 dB C HI (High) - Weighting: 65-130 dB Resolution: 0.1 dB
Typical instrument frequency range:	30Hz-10KHz
Frequency Weighting:	A C - weighting
Time Weighting:	Fast
Maximum Hold:	Decay < 1.5dB/3 min
Accuracy:	±3.5 dB at 94 dB sound level, 1KHZ sine wave
Microphone:	Electric condenser microphone

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Light

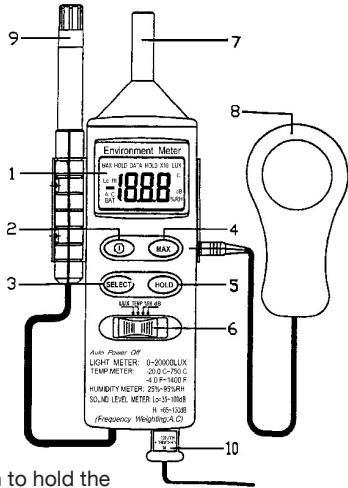
Measuring Range:	20, 200, 2 000, 20 000 lux (20,000lux range reading x10)
Overrate Display:	Highest digit of "1" is displayed
Accuracy:	±5%rdg +10dgts (calibrated to standard incandescent lamp at color temperature 2856k)
Repeatability:	±2%
Temperature Characteristic:	±0.1%/°C
Photo detector:	One silicon photo diode with filter
Photo Detector Dimensions:	115 x 60 x 27mm

Humidity/Temperature

Measurement Range:	Humidity 25%~95%RH
Temperature:	-20.0°C~+50.0°C -4°F ~+122°F
(K-type)	-20.0°C~+200.0°C -20°C~+750°C
	-4.0°F~+200°F -4°F~+1400°F
Resolution:	0.1%RH, 0.1°C, 1°C/0.1°F, 1°F
Humidity Accuracy:	±5%RH (at 25°C,35~% 95% RH)
Humidity sensor response:	approx. 6min
Temperature:	±3%rdg ±2°C (at -20.0°C~+200.0°C)
	±3.5%rdg ±2°C (at-20.0°C~+750°C)
	±3%rdg ±2°F (at-4.0°F~ +200.0°F)
	±3.5%rdg ±2°F (at-4°F~+1400°F)
Input Protection:	60V DC or 24V AC RMS

Instrument Description

1. *LCD display*: 3 1/2 digits LCD display with units of Lux, x10 Lux, °C, °F, %RH, dB, A, C, Lo, Hi, low battery "BAT", MAX HOLD and DATA HOLD indications
2. : Turns the meter ON or OFF
3. *SELECT*: Selects the Meter's functions and ranges
4. *MAX*: Press the MAX button to hold the maximum measurement being read. Press the button once again and the function will be turned off
5. *HOLD*: Press the HOLD button to hold the current measurement that is being read on the Meter. Press the button once again and the function will be turned off for further measuring
6. *Function switch*: This switch selects measurement functions of Lux, Temperature, Humidity and Sound Level
7. *Microphone*: Probe containing the electric condenser microphone
8. *Photo Detector*: Probe containing the long life silicon photo diode
9. *Humidity and Temperature*: Probe that containing the humidity sensor and semiconductor sensor
10. *K-type thermocouple socket*: Slot where K-type temperature probe is to be inserted



Operating Instructions

Measuring Sound Level

1. Turn the unit on and move the Function switch to the “dB” position
2. Face the Microphone to the sound source in a horizontal position
3. Press the SELECT button to select A & dB, C & dB, Lo & dB or Hi & dB
4. The A C-weighting curve is nearly uniform over the frequency range from 30 to 10 KHz, thus giving an indication of overall Sound level
5. The Fast response is suitable to measure shout bursts and peak values from sound source
6. The sound level will be displayed

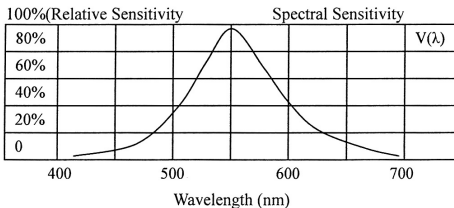
Note: Strong wind (over 10m/sec.) striking the microphone can cause incorrect measurements, in windy locations a windscreen should be used on the microphone

Measuring Light

1. Turn the unit on and move the Function switch to the “Lux” position
2. Plug in the Photo Detector in the unit in the appropriate slot and face the photo detector to light source in a horizontal position
3. Press SELECT button to select 20, 200, 2 000 or 20 000 LUX ranges
4. Read the illuminance nominal from the LCD display
5. Over-range: If the instrument only displays the number one (1) on the screen the input signal is too strong and a higher range should be selected
6. When the measurement is completed remove the photo detector from the light source

Spectral sensitivity characteristic: The filter in the supplied photo diode makes the spectral sensitivity characteristic almost meet the I.C.L. (International Commission on Illumination) photopia curve $V(\lambda)$ as described in the chart on the following page:

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Recommended Illumination:

Locations	Lux
Office	
<i>Conference/Reception room</i>	200 ~ 750
<i>Clerical work</i>	700 ~ 1 500
<i>Typing drafting</i>	1000 ~ 2 000
Factory	
<i>Packing work/Entrance passage</i>	150 ~ 300
<i>Visual work at production line</i>	300 ~ 750
<i>Inspection work</i>	750 ~ 1 500
<i>Electronic parts assembly line</i>	1500 ~ 3 000
Hotel	
<i>Public room/Cloakroom</i>	100 ~ 200
<i>Reception/Cashier</i>	200 ~ 1 000
Store	
<i>Indoors Stairs Corridor</i>	150 ~ 200
<i>Show window/Packing table</i>	750 ~ 1 500
<i>Forefront of show window</i>	1500 ~ 3 000
Hospital	
<i>Sickroom/Warehouse</i>	100 ~ 200
<i>Medical Examination room</i>	300 ~ 750
<i>Operation room/Emergency Treatment</i>	750 ~ 1 500
School	
<i>Auditorium/Indoor Gymnasium</i>	100 ~ 300
<i>Class room</i>	200 ~ 750
<i>Laboratory Library Drafting room</i>	500 ~ 1 500

Measuring Humidity/Temperature

Humidity Measurement

1. Turn the unit on and move the Function switch to the “%RH” position
2. Remove the Humidity and Temperature Probe from its slot and point it in the direction that you wish to measure
3. The display will then show the humidity reading value (%RH)
4. If the tested environment humidity value changes the Meter will need a few minutes to stabilize a “%RH” reading

Warning: Don't expose the humidity sensor to direct sunlight. Don't touch or manipulate the humidity sensor.

Temperature Measurement

1. Turn the unit on and move the Function switch to the “TEMP” position
2. Press the SELECT button to select either a “0.1°C or 1°C and 0.1°F or 1°F” range
3. The display will show the environment temperature reading value (°C/°F)
4. For a surface temperature measurement insert the K-type Temperature Probe into the K-type thermocouple socket
5. 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/°F)

Warning: When the Function switch is on Temperature and is set to the “0.1°C or 1°C and 0.1°F or 1°F” range, never attempt a voltage measurement with the test leads inserted into the K-type thermocouple socket, you might be injured or damage the meter

