



**Class 1 Sound Level Meter  
and (optional) 1/1 Octave Band Filter**



**KCF Technologies, Inc.**  
Part Number KCF-7100

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For safe operation, please read the manual carefully before using the Sound Level Meter

## 1. DESCRIPTION

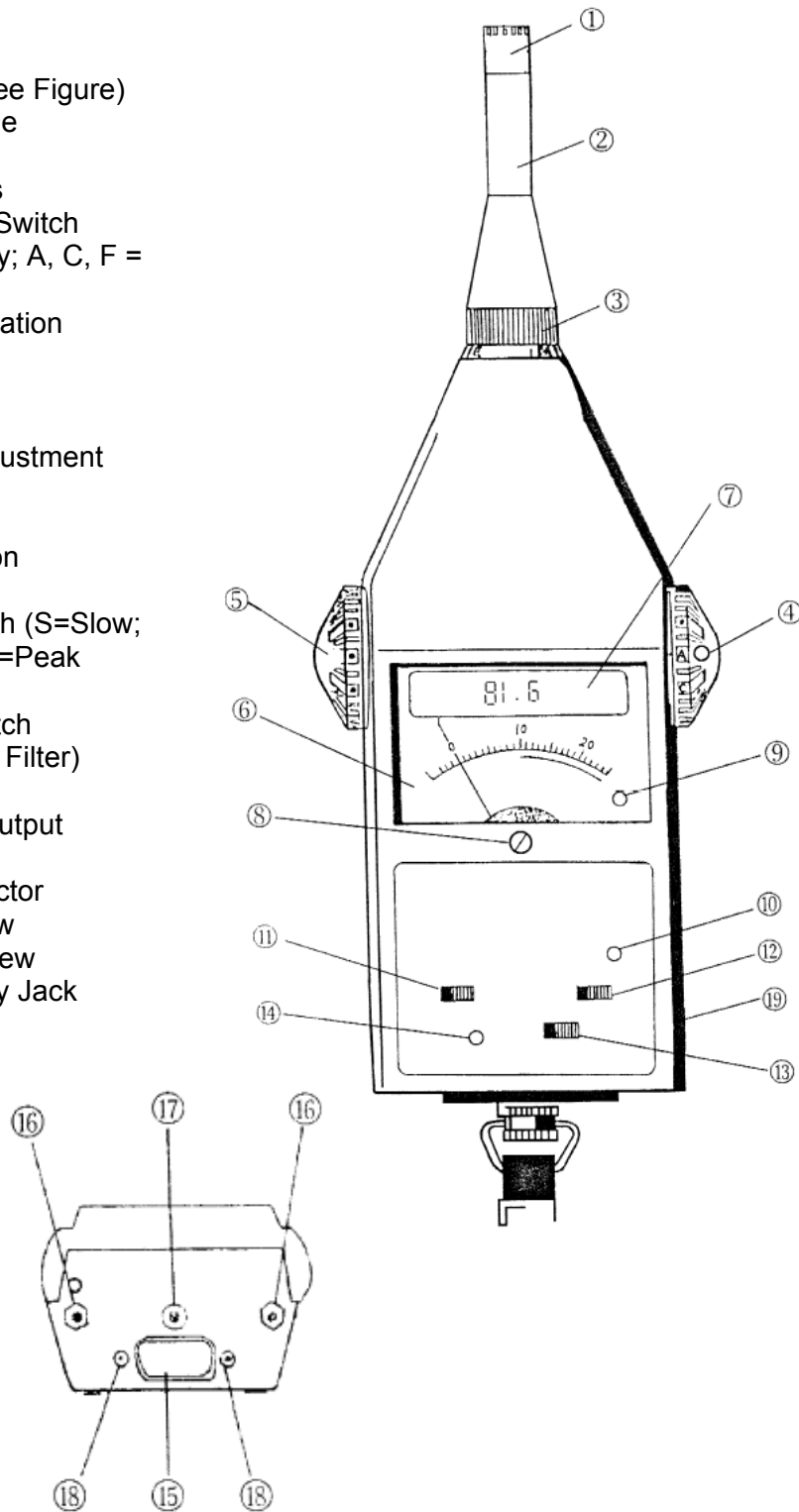
The KCF Model 7100 Sound Level Meter is fully certified Class 1 Sound Level Meter. The optional 1/1 Octave Band Filter adds the additional function of octave-band frequency analysis. The KCF Sound Level Meter provides a simultaneous analog-needle and digital-LED display, giving the user an exact eye-pleasing reading every time.

## 2. SPECIFICATIONS

- 1) Microphone
  - A. ½ inch condenser microphone
  - B. Polarization Voltage: 60 V
  - C. Sensitivity: -32 +/- 3 dB/Pa (1 V/Pa)
- 2) Measurement Range (dB ref 20E-6 Pa)
  - A. A Weighted 32 to 140 dB
  - B. C Weighted 40 to 140 dB
  - C. F (Linear) 45 to 140 dB
- 3) Frequency Range: 10 Hz – 20 kHz
- 4) Size: 29 x 10.6 x 6.5 cm
- 5) Output Function Options
  - A. Slow
  - B. Fast
  - C. Impulse
  - D. Peak (Hold)
- 6) Overload switch if measurement is > 10 dB out of range
- 7) Power
  - A. Internal - Four AA batteries
  - B. External DC Power Supply – 6 V at 70 mA
- 8) 1 kHz internal source for calibration
- 9) Analog Signal Output with filter input/output connector.
- 10) Included Equipment
  - A. Microphone, pre-amplifier, amplifier, LMS circuitry, peak detector, calibration signal generator, meter, A/D transmitter, power supply, LED display.
- 11) Optional Equipment
  - A. 1/1 Octave Band Filter

### 3. OPERATION

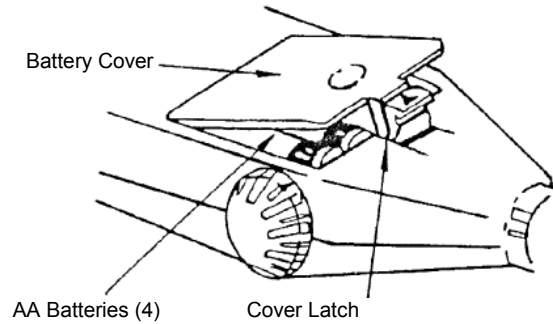
- 1) Component Reference (see Figure)
  1. Condenser Microphone
  2. Pre-amplifier
  3. Pre-amplifier lock nuts
  4. Power/Filter Selector Switch  
(OFF, BATT = Battery; A, C, F =  
Filter Choice)
  5. Amplitude (dB) Attenuation  
(ATT) Range Switch
  6. Analog Meter
  7. LED Display
  8. Analog Meter zero adjustment  
screw
  9. Overload display light
  10. Reset (overload) button
  11. Range Switch
  12. Timing Function Switch (S=Slow;  
F=Fast; I=Impulse; P=Peak  
Hold)
  13. INT-CAL-FILTER Switch  
(Internal, Calibration, Filter)
  14. Calibration Screw
  15. External Filter Input/Output  
Connector
  16. Analog Output Connector
  17. Tripod Mounting Screw
  18. Cable Connecting Screw
  19. External Power Supply Jack



## 2) Before Operation

### A. Battery Installation

1. Turn Power/Filter switch to "OFF"
2. Remove back battery cover
3. Insert four AA batteries with correct direction
4. Turn power switch to "BATT". Analog meter should move to the green line.

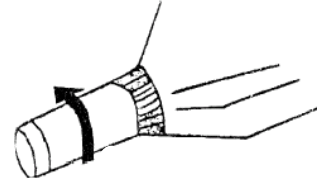


### B. If using DC External power supply

1. Use only recommended external power supply
2. Connect DC power cord to External Power Supply Jack

### C. Installing the Pre-amplifier and Microphone

1. Locate the pre-amplifier and microphone (included separately for protection)
2. CAUTION – The microphone is very sensitive, handle it very carefully during installation
3. Insert the pre-amplifier into the mounting holes on top of the Sound Level Meter, and tighten the screw
4. Screw the microphone into the top of the pre-amplifier



### D. Internal Calibration

1. Allow the Meter to warm up for 10 minutes prior to calibration
2. Turn the Power/Filter switch to "F" (Linear)
3. Set the Timing Function switch [12] to "F" (Fast)
4. Turn the INT-CAL-FILTER to "CAL" (Calibration)
5. Set the Range switch to "MIDDLE"
6. Set the ATT switch [5] to 80
7. Adjust the calibration screw until the Analog display needle falls on the red line (94 dB)

### E. Acoustic Calibration using a PistonPhone

1. Turn the Power/Filter switch to "F" (Linear)
2. Turn the Timing Function switch to "F" (Fast)
3. Insert the microphone into the PistonPhone
4. Turn on the PistonPhone
5. Set the Range switch depending on the PistonPhone amplitude, and set the ATT switch accordingly
6. Turn the calibration screw until the Analog display matches the specified PistonPhone sound level

## 3) Operation

- A. ATT switch must be adjusted according to the sound level, so that the Analog meter needle is approximately in the center of the display
- B. If the dynamic range is too large, use the Range switch on "Middle"
- C. If the Analog meter overloads often, set the Range switch to "HIGH"
  1. NOTE: Refer to line F for an explanation of Range settings
- D. If the Analog meter dips low, set the Range switch to "LOW".

- E. For normal measurement, set the Timing Function Switch to “F” (Fast). If the sound level is consistent, use “S” (Slow) for increased accuracy. To measure an impulse amplitude, use “I” (RMS Impulse). To measure a peak amplitude, choose “PEAK” (Peak Impulse) and the reading will be held for one minute. Press the “RESET” button to return to normal operation.
  - F. Analog Reading – The Analog measurement reading is read using the following formula:
    - ATT setting (dB) + Range (dB) + display (dB).When the Range is “MIDDLE”, the Range adjustment is zero. When Range is “HIGH”, the Range adjustment is +20 dB. When Range is “LOW”, the Range adjustment is –20 dB.
  - G. Digital Reading – The Digital measurement LED display takes the measurement range and attenuation level into account.
- 4) Signal Output
- A. Plug “Banana” type connectors into the Filter Mounting Screws. Be careful to note the positive (Red) and ground (Black).

## **OPTIONAL – 1/1 OCTAVE BAND FILTER**

### **1. DESCRIPTION**

The KCF #7500 1/1 Octave Band Filter screws mounts conveniently to the bottom of the KCF #7100 Sound Level Meter. This expands the function of the Sound Level Meter for octave band frequency analysis.

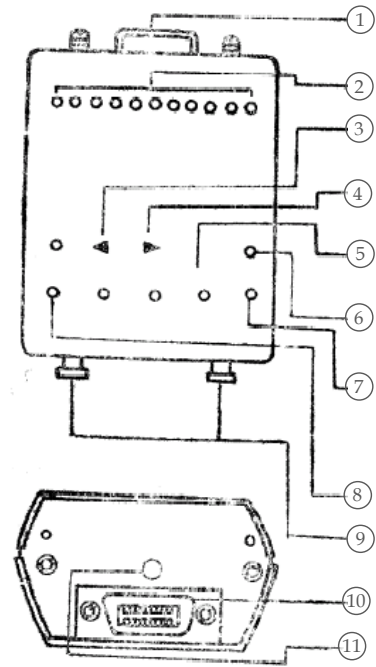
NOTE: The Octave Band Filter component is purchased as a separate option to the Sound Level Meter

### **2. SPECIFICATIONS**

- 1) Frequency Range: 31.5 to 16000 Hz
  - A. Octave band frequencies are 31.5, 63, 125, 250, 500, 1k, 2k, 4k, 8k, and 16k Hz
- 2) Directly connects to KCF Sound Level Meter
- 3) Use electronic Push-Buttons to set the filter range
- 4) If the Power/Filter switch is set to “F” (Linear), the All-Pass function can be used
- 5) If the Power/Filter switch is set to “A” or “C” Weighting, only the octave band filters can be used
- 6) Digital Output connector is located at the bottom of the Filter
- 7) Power Supply to the Octave Band Filter is from the Sound Level Meter
- 8) Press the “Gain” button to increase the reading by 20 dB for low amplitude sound measurements
- 9) Relevant Standard
  - A. This filter meets the IEC R225 International Standards
  - B. Dynamic Range > 50 dB

### 3. OPERATION

- 1) Component Reference (See Figure):
  1. Sound Level Meter Connector
  2. Center Frequency LED Display
  3. Left Frequency Selector Key
  4. Right Frequency Selector Key
  5. All-Pass Key
  6. Output Connector
  7. Start/Stop Key for External Sync
  8. Gain (+20 dB) Key
  9. AC Output and Mounting Screw
  10. Digital Output Plug
  11. Tripod Mounting Screw
- 2) Before Operation
  - A. Connect the Octave Band Filter to the Sound Level Meter using the Mounting Screws
  - B. Set the Power/Filter switch to "F" (Linear)
  - C. Turn the INT-CAL-FILTER switch to "CAL"
  - D. Set the Range switch to "MIDDLE"
  - E. Set the ATT switch to 80
  - F. Set the Timing Function Switch to "F" (Fast)
  - G. Adjust the calibration screw until the Analog display needle matches the red line (94 dB)
- 3) Taking Measurements
  - A. Push the "All Pass" Key
  - B. Set the Power/Filter switch to "F" (Linear)
  - C. Turn the INT-CAL-FILTER to "FILTER"
  - D. Push the "Right" and "Left" Key to select the desired octave band and take measurements



For any maintenance other than a battery change, or in case of malfunction, please contact:

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### INCLUDED ACCESSORIES

- |  |         |
|--|---------|
| 1) KCF #7100 Class 1 Sound Level Meter     | 1 piece |
| 2) Type 1 Sound Level Meter Certification  | 1 piece |
| 3) Operators Manual                        | 1 piece |
| 4) OPTIONAL – KCF #7500 Octave Band Filter | 1 piece |