

# User Manual for the Model 14 Sound Level Meter



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**Overview.**

Thank you for purchasing the Model 14 sound level meter from Pulsar Instruments plc. This entry level meter is designed to be quick and simple to use when taking basic sound measurements and we are sure it will meet your requirements.

The Model 14 is a general purpose digital sound level meter which meets the full requirements of IEC 61672 to Class 2. The instrument has 'F' (Fast) response and has both 'A' and 'C' frequency weightings. In addition facilities are provided to hold the maximum reading occurring throughout the measurement period.

**First time use.**

The Model 14 should be inspected for any signs of damage and also to ensure that all relevant accessories are present. Your Model 14 will have been supplied either as a single unit or as part of a full measurement kit, Model 14-K.

**Model 14 Instrument Check List**

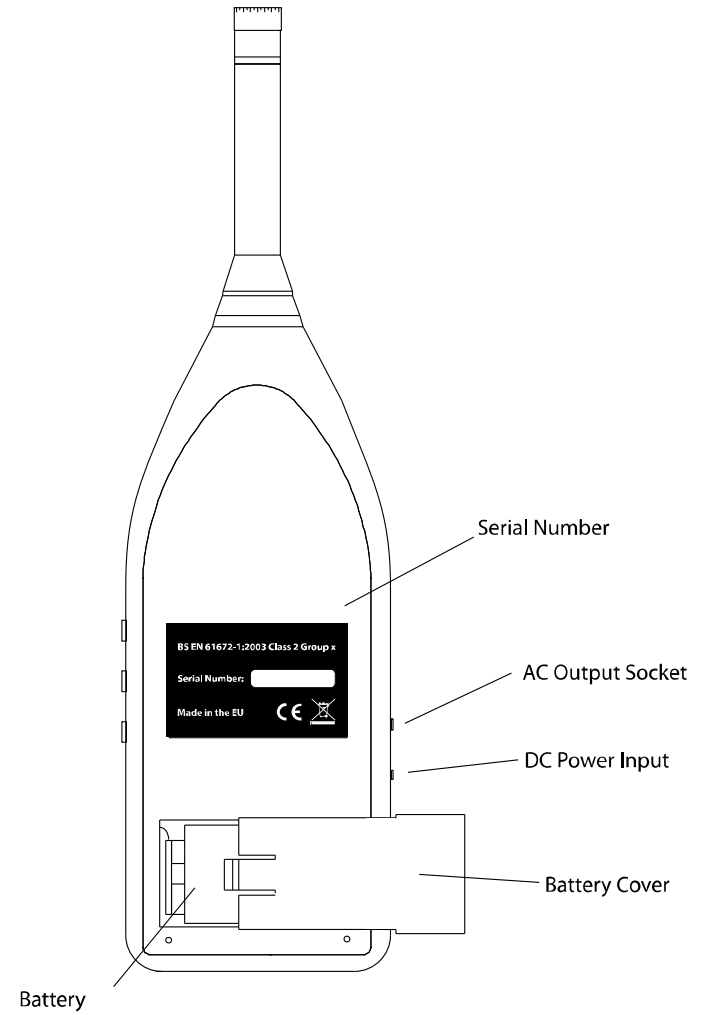
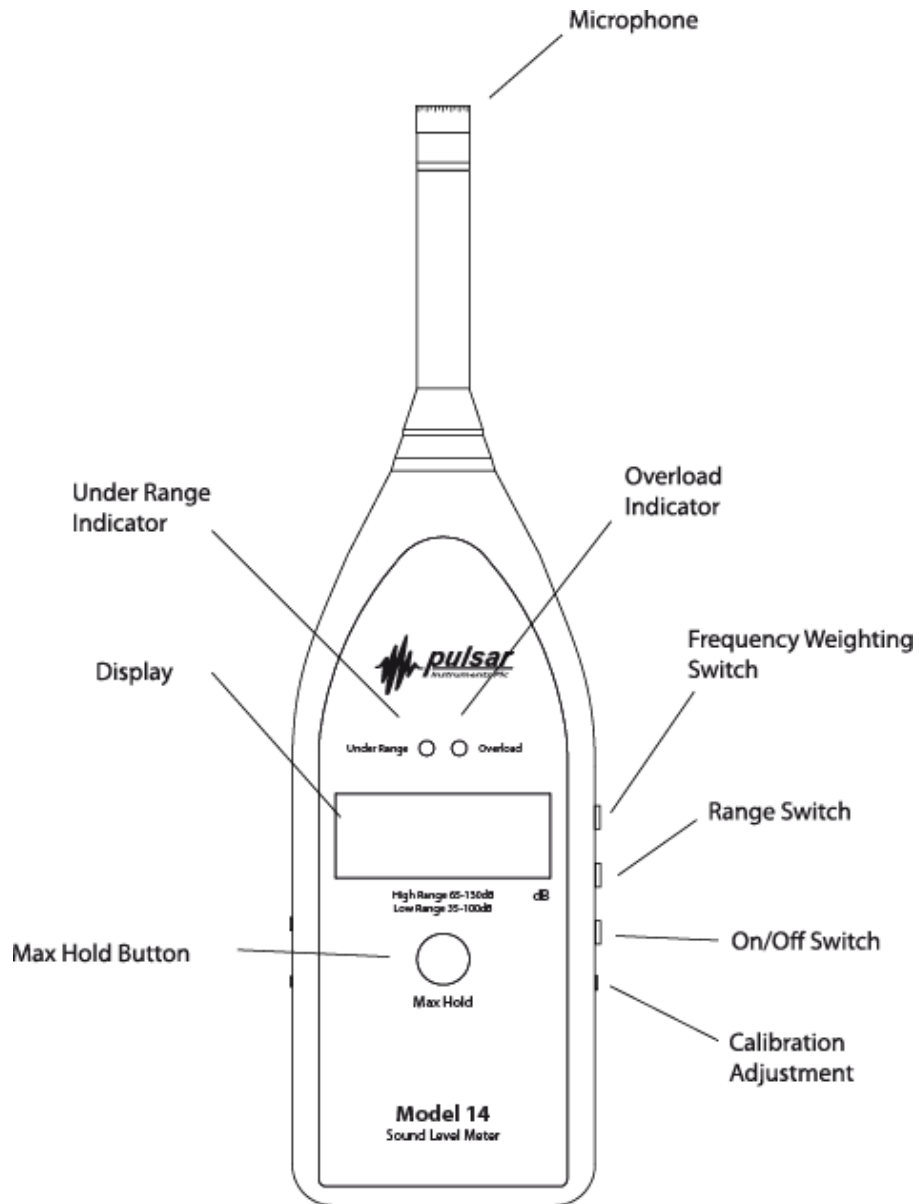
The Model 14 Sound Level Meter is supplied with the following accessories as standard:

- Model 14 Class 2 Sound Level Meter
- 50mm windshield
- Calibration Screwdriver
- User Manual
- Certificate of Calibration
- 1 x 9V Battery

The Model 14 Sound Level Meter can also be supplied as a complete measurement kit, the Model14-K, which includes a Model 106 Class 2 Acoustic Calibrator and a carrying pouch.

For further details of the options and accessories for the Model 14 Sound Level Meter, please contact your local representative.

### Instrument Controls



## Taking Measurements

Before taking measurements, ensure the instrument has a new or highly charged battery fitted. The instrument is supplied with a battery but it is not fitted for transit. See page 9 for details of fitting and changing the battery.

Turn the instrument on by moving the OFF/F slide switch to the F position:

- > OFF = Instrument is powered off.
- > F = Fast Time Weighting

Allow the instrument to settle for 10 seconds before calibrating or taking measurements.

Ensure the instrument is calibrated (see page 10 for details of calibration)

Select the required Frequency Weighting using the A/C slide switch:

- > A = A-Weighting or dB(A)
- > C = C-Weighting or dB(C)

Select the most appropriate range for the acoustic environment using the H/L slide switch:

- > L = Low Range (suitable for levels up to 100dBA)
- > H = High Range (suitable for levels over 65dBA)

If you need to capture the maximum noise level measured then press the MAX HOLD button for at least ½ second.

Once released the text HOLD is illuminated in the top left of the instrument display. In this mode the highest measured sound pressure level is displayed.

To turn off the maximum hold facility either press the MAX HOLD button again or turn the unit off.

## Fundamental precautions

This section contains some simple points that should be considered when using the Model 14 instrument:

- a) Allow the instrument to settle for 10 seconds after switching on before calibrating or taking measurements.
- b) Always check the battery before and after each measurement. The Model 14 monitors the battery continuously while operating.
- c) Ensure that the white MAX HOLD function is turned off when not required. If this is not done, the display will freeze the last reading and the word HOLD will be displayed on the top left of the LCD.

- d) Wherever possible, always check the instrument calibration before and after each measurement.
- e) Whenever the instrument is not to be used for a long period of time (> one month) then remove the battery completely. This action will prevent leakage damage.

## Display and Indicators

### Display

The LCD display of the Model 14 is scaled in decibels, either 'A' or 'C' weighted, depending on the position of the A/C slide switch.

There are indicators in the display as follows:-

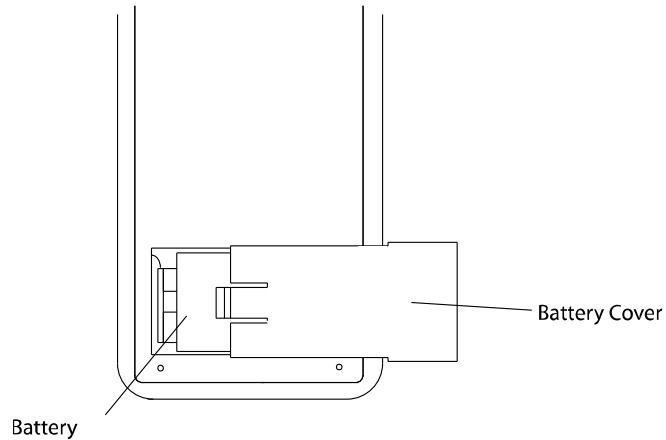
Function	Indicator	Cause and Possible Action
Low Battery	LOWBAT	Battery capacity low, replace battery
Maximum Hold	MAX HOLD	The display is MAX, push MAX HOLD to reset

### Indicator

There are also two status indications above the instrument display, these have the following functions:

Function	Indication	Cause and Possible Action
<b>Under Range</b>	Green Light	The sound level is below the current measurement range. Move the L/H slide to the L position.
<b>Overload</b>	Red Light	The sound level is above the current measurement range. Move the L/H slide switch to the H position.

## Fitting a New Battery



1. Ensure the instrument is turned off before removing the battery cover.
2. Remove the battery cover.
3. The battery is made accessible by pressing the left hand side of the battery cover down slightly and then sliding it to the right. The spent battery can then be removed and disposed of safely.
4. A new battery, IEC 6F22 (NEDA 1604, PP3) can then be fitted. The battery can only be fitted in one orientation.
5. Replace the battery cover by sliding it back into place from right to left.

## Field Calibration

It is vital that the calibration of ANY sound level meter is checked before and after each measurement. If this is done, it is reasonable to assume that the calibration during the measurement was correct.

If this is NOT done, you will not subsequently be able to be certain that the instrument calibration was correct and you can never be certain the sound level was as measured. This process is commonly referred to as *field calibration*.

The sound level meter is calibrated acoustically using an external reference, e.g the Sound Level Calibrator Model 106, which is placed over the microphone. The calibrator generates a stabilised Sound Pressure Level of 94dB (+/- 0.3dB) at a frequency of 1kHz.

## Calibration Procedure

1. Ensure the battery is fitted correctly and has sufficient power left.
2. Ensure the microphone capsule is fitted correctly
3. Turn the instrument on with the following settings:  
OFF/F in the F position  
L/H in the L position  
A/C in the A position

(This relates to Fast Time Weighting, Low Measurement Range and dB(A) Frequency)

4. Ensure the MAX HOLD function is not active. (The word HOLD is not displayed in the top left hand corner of the instrument display)
5. Attach the acoustic calibrator and turn it onto the 94dB output setting. An acoustic calibrator such as the Model 106 is suitable.
6. Using the provided calibration screwdriver, **slowly** adjust the CAL potentiometer until the instrument display reads 93.7dB(A). (Turning the CAL potentiometer clockwise increases the displayed level whereas anti-clockwise reduces the displayed level)

Note: Although the Model 106 Acoustic Calibrator has an output of 94dB, the pressure correction of the microphone capsule is 0.3dBA. For this reason the Model 14 must be adjusted to give a reading of 93.7dBA.

7. The instrument is now calibrated.

For details of the operation of the Model 105 and Model 106 Acoustic Calibrators, please refer to the user manuals supplied with these units.

## Technical Specification

A full technical user manual, including mandated rating plate information is available upon request.

Standardisation:	IEC 61672-1:2002 Class 2 IEC 60651:1979 Type 2 I
Measurement Range:	35dB(A) to 130dB(A) 40dB(C) to 130dB(C)
Range Information:	L (Low) = 35dB(A) to 100dB(A) > 100dB(A) = over range indicator  H (High) = 65dB(A) to 130dB(A) < 65dB(A) = under range indicator > 130dB(A) = over load indicator
Frequency Weighting:	A & C Weighting to IEC 61672-1:2002 Class 2
Time Weighting:	Fast to IEC 61672-1:2002 Class 2 Time constant 125mS
Display Functions:	Normal (Sound Level), Maximum Hold
Measurement Functions:	LAF, LCF, LAFMax, LCFMax
Display Flags:	Over Load (Red Light) Under range (Green Light) Maximum Hold (HOLD) Low battery (LOWBAT)
Reference Point:	94dB(A), 1000Hz on Low Range (L)
Display:	3 ½ digit LCD Update rate of 1Hz
Resolution:	0.1dB
Electrical Outputs:	AC Out Max output = 2V, output impedance 600Ohm
Power:	1 x 9V (6F22, PP3) External DC Power, 7V to 10V
Microphone:	½" pre-polarised electret condenser
Operating Temperature:	-10°C to +50°C
Storage Temperature:	-20°C to +60°C
Dimensions:	Length 248mm, Width 66mm, Depth 30mm
Weight:	227gms (8oz) with battery

## Appendix 1 – EU DECLARATION OF CONFORMITY

### Pulsar Instruments plc Declaration of Conformity



Manufacturer: Pulsar Instruments Plc  
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Filey, North Yorkshire  
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### Equipment Description

The following equipment manufactured after 1<sup>st</sup> January 2007:

Model 14 Sound Level Meter

Along with their standard accessories

According to EMC Directives 2014/30/EU

meet the following standards

### EN 61000-6-3 (2007)

EMC: Generic emission standard for residential, commercial and light industrial environments.

### EN 61000-6-1 (2007)

EMC: Generic immunity standard for residential, commercial and light industrial environments.

Signed

Dated 17 November 2007

M. Williams  
Director

## Guarantee

Pulsar Instruments Plc offers a 12 month guarantee on all of their units. This covers all parts and labour excepting only damage caused by the user. Because of the unique fragility of microphones, only internal short or open circuits are accepted as faults and not accident damage. The guarantee requires the user to return the unit to their nearest authorised Pulsar Instruments Plc Agent. This guarantee is in addition to any statutory rights in your country.

## Pulsar Instruments Offices

The address given below is the Pulsar Instruments Plc offices. Pulsar Instruments Plc also have approved distributors and agents in many countries worldwide. For details of your local representative, please contact Pulsar Instruments Plc at the address below. Contact details for Pulsar Instruments authorised distributors and agents are also available from the Internet Website at the address shown below.

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