



# DiGiFree SoundMeter

## Main functions

This application brings the basic functionalities of a basic **Sound Level Meter (SLM)** to your phone: mobile hardware introduce some limitations (lower dB range and accuracy), but using it properly you can collect useful information from your surveys.

Some functions:

### Sound Level Meter

- 2 SLM measuring modes
- 4 values displayed
- SPL versus time chart

## Quick Start

1. **Calibration (only the first time):** check/set the **calibration values** of your mobile (see the **settings page** and the **calibration page** of this guide)
2. keep your fingers away from the mobile microphone
3. silence your phone to avoid any ring tones, vibrations and other sounds
4. orient the phone microphone toward the noise source keeping the correct distance
5. click on one of the function buttons: **Dynamic** (100ms , max, min, avg), **Average** (1 sec, max, min, avg).
6. A long click on the decibel number resets the current measurement

## Start Page

Button functions:

1. **Dynamic**: this mode (100ms) is useful to measure a steady state sound (small fluctuations) or to plot and view on a chart the details of a dynamic sound. Minimum value, maximum value and Average value of the entire observation period are also provided. In this mode it is possible (**menu functions**) to set an **instantaneous threshold** (if exceeded it changes the max value color to red) and to **share text/screen data**.
2. **Average**: this mode may be useful to measure a dynamic sound (1 second averaging time), when the previous mode results in fluctuations of 4 dB or more. A bar chart is displayed and refreshed accordingly. Minimum value, maximum value and Average value of the entire observation period are also provided. In this mode it is possible (**menu functions**) to set an **average threshold** (if exceeded it changes the max value color to red) and to **share text/screen data**

## Menu functions:

1. **HELP**: it shows the app help
2. **INFO**: link to our site
3. **SETTINGS**: app settings page
4. **HELP US**: email link to our service

## Settings Page

This page allows to personalize all the app settings (access from the Start Page menu):

1. **Wallpapers**: it is possible to select the favorite wallpaper (default: sky)
2. **Maximum SPL\***: it is possible to specify the microphone maximum SPL in dB (default 90, suitable for most mobiles)
3. **30 dB SPL \***: it is possible to specify the calibration value for a 30 dB SPL signal (default 0 dB); often this level needs calibration (as low as  $-10$  dB)
4. **50 dB SPL \***: it is possible to specify the calibration value for a 50 dB SPL signal (default 0 dB); usually this level does not need significant calibration ( $+ - 1$  dB)
5. **70 dB SPL \***: it is possible to specify the calibration value for a 50 dB SPL signal (default 0 dB); sometimes this level needs a calibration (as low as  $-6$  dB)

\* Remember that a wrong setting will effect the accuracy of your measurements.

**If you do not have the correct information of your mobile leave the default values or see the calibration information section.**

## Calibration

The **default calibration values are suitable for most smart phones**. Some mobiles are automatically calibrated in the first installation phase (Samsung GT-I9000, GT-9300, GT-S5570). If necessary it is possible to change the calibration parameters in the settings page. For a perfect calibration you need a **signal generator**, but you can get a fair calibration with the following:

1. **Lower level:** start the dynamic function in a **silent room** (no external noises no talking, like a library or a bedroom), read after 10 seconds the average value, calculate the fix with **(30 - average value)** and select it in the 30 dB SPL setting
2. **Medium level:** start the dynamic function in a **quite room** (no external noises, some low talking but not closer than 5 meters, like a quite office), read after 10 seconds the average value, calculate the fix with **(50 - average value)** and select it in the 50 dB SPL setting
3. **High level:** start the dynamic function in a **noisy room** (many people talking, like a noisy office or pub), read after 10 seconds the average value, calculate the fix with **(70 - average value)** and select it in the 70 dB SPL setting

## Troubleshooting

1. **Wrong SPL maximum value:** all your measurement are higher or lower than expected. Enter in the settings menu and select the correct SPL maximum value
2. **Wrong SPL calibration:** only low or/and high level measurements are higher or lower than expected. See the Calibration section and type the right calibration values.
3. **Attenuation on mobile microphone:** your measurements never reach the full scale (-3/6 dB) even with a high noise (or just blowing on the mic.). **Restart android**
4. **No signals detected below 20dB or over 100dB:** The smart phone microphones do not work under 20 dB or over 100 dB (they are calibrated for human voice, 30/70 dB)
5. **Signal attenuation near RTA band limits :** the mobile mic may attenuate frequencies <300 Hz and >15000 Hz
6. **Your mobile employes AGC:** Automatic Gain Control may introduce significant errors and in this case we do not recommend to use this application on your mobile.