

effects of sound reflected from your body. This makes it easy to use the meter with auxiliary recording or test equipment.

### CAL(CALIBRATION)

Your meter has been accurately calibrated at the factory and normally will not require further adjustment. If necessary, an audio professional can use the **CAL** hole on the meter with special equipment, including a sound generator, to calibrate it.

### MEASUREMENTS

#### Important:

- Do not hold the meter directly between you and the sound source, as this might produce an error of several decibels in the frequency range above 100 Hz. Position the meter so an imaginary line between you and the meter is perpendicular to a line between the meter and the sound source.
- Handle the meter carefully. The microphone and meter movement are fragile and might be damaged if the instrument is dropped. Do not operate the meter at a range setting that causes "pegging" of the needle. This could damage the sound levels.

Follow these steps to select the desired response, weighting, and range.

1. Set **RESPONSE** to **FAST** if the sound source you want to measure consists of short bursts or if you want to measure only peak values. Or, set **RESPONSE** to **SLOW** if you want to measure average sound levels.
2. Set **WEIGHTING** to **A** if you want to measure noise level or **C** if you want to measure sound levels of musical material.
3. Set **RANGE** to the highest setting(**120 dB**)then adjust it downward until there is significant deflection of the needle. For the greatest accuracy, always use the lower of any two possible settings.

For example, if **RANGE** is set to **80 dB** and the meter reads around **-5**, reset **RANGE** to **70 dB** so the meter reads **+3**, for an actual sound level of 73 dB.

**Important:** For meaningful readings, any particular sound to be measured must be at least 10 dB louder than the background noise level.

While taking measurements, minimize the effect of your body's presence. When the sound is coming mainly from one direction, the level reading might be significantly affected by reflections from your body.

For the most accurate readings and the best polar response, point the meter's microphone toward the sound source when possible.

### CHECKING NOISE LEVELS

This chart, gathered from Federal, state, and local agencies, shows standards for just how much noise is acceptable.

Sound Level(dB) (A- Weighting, SLOW response)	Maximum Duration Per Day(hours)
90	8
92	6
95	4
97	3
100	2
102	1 1/2
105	1
110	1/2
115	1/4 or less

Permissible noise exposures.Extracted from U.S. Department of Labor Noise Regulations.

Noise is inevitable in almost any environment. Depending on the level and duration, noise can be a minor irritant, a definite disturbance, or even a threat to your hearing.

To use your meter to check noise levels, set **WEIGHTING** to **A** and **RESPONSE** to **SLOW**. Take measurements at several points in the test area, with the meter positioned properly.

### CHECKING ROOM ACOUSTICS

The size, shape, and furnishings of a room can have a tremendous effect on a home theater system's performance. A "hard" room with bare surfaces tends to exaggerate treble response, sometimes giving the music a strident quality. A "soft" room with curtains, over-stuffed furniture, carpet, etc. might reduce high-frequency response so the bass sounds dominant, giving you a "mushy" sound. Dewaves might also develop in the room, giving your system a "peaky," eccentric response.

The first step in solving this problem is to analyze the room's acoustics with your meter and a suitable test recording. The test recording should produce pure tones, one at a time, at intervals spanning the audio spectrum. Make a graph or table showing the sound levels generated by the individual tones. This gives you a clear idea of the frequency response of your "total system" --home theater equipment and room included.

The next step is to smooth out the response. Adjusting tone controls and varying speaker placement might improve the sound significantly. But, to approximate the ideal, "flat response," you could add a frequency equalizer to your home theater system. Your local Radio Shack store carries frequency equalizers that let you boost or cut response in different ranges, as indicated by your frequency response analysis. Properly equalized, your system can sound like one costing considerably more!

Note: If **WEIGHTING** is set to **C**, the meter's frequency response is flat from 32 to 10,000 Hz ( $\pm 3$  dB). Above 10 kHz, the frequency response of the meter drops off rapidly. Be sure to consider this when you use a test recording that includes tones at the extreme high end of the audio spectrum.