



XT-SL Combined Photometer, Sound Level Meter and off-screen A/V sync meter.

- ✓ Measure lip sync directly off the screen using blip and flash.
- ✓ Works on all systems, HD or SD.
- ✓ Align loudspeakers and displays to International Standards.
- ✓ Sound Level Meter covering 60 to 130 dBA and dBc (slow), for noise level, multichannel audio line up and acoustics tests.
- ✓ Photometer, reads 0-1999 candelas per m² for display luminance set-up
- ✓ A/V sync reads audio 0-800msec early or late, reading directly from blip and flash (e.g. SMPTE header, VT clock, XT-TSG DVD test disc or other marker signals).
- ✓ Compact, light, rugged, and simple to use. Big, backlit, single range, un-ambiguous display - ideal for use in dark viewing areas.

Power:

Pressing the Power button activates the unit and steps between functions. Dimming of the display backlight indicates a low battery, although accuracy is maintained well below this voltage level. An automatic switch off occurs approximately three minutes after the last button press.

Battery Life:

Approximately 1000 measurements using standard alkaline AA cells.

Photometer

The front facing sensor measures the visible brightness of surfaces directly in Candelas per square metre (nits). It has a narrow field of view (~10 degrees) and a corrected eye response. Remember to take measurements normal to the display surface, especially with LCD displays.

Although surface contact is not necessary (and not possible on front projection screens), beware stray light reflected off the display. The front sensor surface of the XT-SL is felt masked.

Display alignment recommendations:

- . ITU-R BT500 (www.itu.ch)
 - . EBU R-23 is freely available from www.ebu.ch
- The 'XT-TSG' DVD carries many compatible display set-up tests.



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Sound Level Meter

The front mounted microphone is omnidirectional, and has essentially a 'C' weighted slow response that is flat from 32Hz to 12 kHz, reading on one scale from below 60dBC up to above 130dBC for multichannel loudspeaker set-up. This may therefore be used to set-up subwoofer levels unlike A weighted instruments, but it will show up low frequency noise that may otherwise be inaudible.

The 'A' weighted response has essentially the international standard reduced LF response and so it is appropriate for noise level measurements.

The unit is calibrated at 65 and 100dB.

Loudspeaker alignment recommendations:

. For film and US television: - SMPTE R200 (www.smpte.org)

. In Europe: - EBU Tech 3276 (and the multichannel supplement 1) is freely available from www.ebu.ch

The 'XT-TSG' DVD carries many compatible multichannel set-up tests.

A/V Sync Measurements

The program continually checks the state of two comparators that are activated when a 'flash' or a 'blip' occurs. Flash and blip are derived from the Photometer and Sound Level Meter sections respectively.

In normal circumstances activation of one comparator is associated with activation of the other. Activations are usually expected at slightly different times, and either activation may occur first. Activation of the blip comparator first lights the 'audio early' LED, whilst flash activation first illuminates the 'audio late' LED. In both cases the Display shows the time lapse between activations if the other activation occurs within one second.

If one comparator is activated but the other is not within approximately one second, the detected activation is considered spurious and the measurement reset. When a correct reading is obtained, the display resets automatically after approximately three seconds of reading time.

In use: - Point the photometer at the display where a white frame flash on a dark background is expected. The unit should be within the audio field of the associated audio blip, and should be used under good viewing and listening conditions. If a steady reading is not obtained from a blip and flash, and the 'audio early' LED is lit, the photometer may not be seeing the flash correctly.

If the 'audio late' LED is lit without a steady reading, the sound blip may not be correctly heard.

A/V Sync Accuracy

Fine accuracy will depend partly on the room acoustics, as well as the test signal characteristics. Bearing in mind that sound takes three milliseconds to travel one metre, 10 milliseconds is an achievable accuracy under most conditions.

"Note that the average value of the AN sync error may drift with time where video synchronisers are in circuit, and measurements on packet based systems may suddenly jump in value. If these measurements are used to set a compensating delay for this type of system it is advisable to average out the correction applied so that the audio is predominantly late, as early audio never occurs in nature.

A/V sync error recommendations:

- EBU R-37 and Tech 3305 are freely available from www.ebu.ch

- The XT-TSG test DVD includes both VT clock and a specific interactive

A/V sync test intended to be used with X-Tools products.

- A XT-AVSG generator can be used to measure A/V sync directly from the Studio floor or location recording.