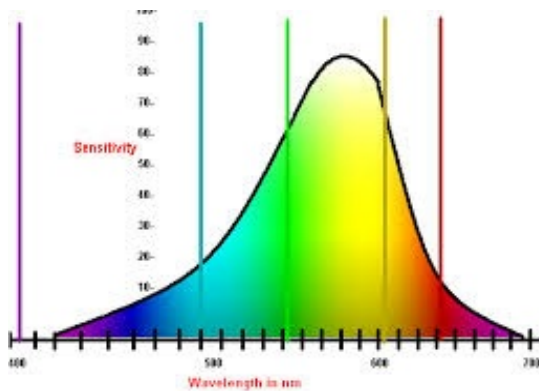


Comparison of three inexpensive visible light meters (lux) purchased on ebay. All have detached sensors on a cord, sensor covers, and cases.

Meter	Price w/ shipping	Accu- racy Spec	Compact Fluorescent Spiral		LED		Incandescent MR-16		Fluorescent T-8 CRI 96 Daylight		Sunlight Indirect Overcast		Low Light Level MR-16	
			Read	Error	Read	Error	Read	Error	Read	Error	Read	Error	Read	Error
Hanwell ULM-Reference	\$1,700	N/A	355	N/A	6080	N/A	2763	N/A	1130	N/A	1120	N/A	140	N/A
LX-1010B Generic	\$13	5%	377	6%	6020	0%	2930	6%	1244	10%	1190	6%	148	6%
LX-1010B Dr. Meter	\$19	4%	396	12%	5820	4%	2970	8%	1328	18%	1220	9%	157	12%
LX-1330B Dr. Meter	\$33	4%	397	12%	5720	6%	2980	8%	1327	17%	1288	15%	154	10%



To the left is a typical sensitivity curve for a light meter sensor. All meter sensors have different curves, although different meters could use the same make/model of sensor. Generally, light in the middle of the visible spectrum contributes most to the total reading and light in the blue and red ends of the spectrum contributes less. Different light sources have varying degrees of each wavelength of light, so some meters may be more accurate for a particular type of light since their measuring curve closely matches the light source. In general, the more expensive the sensor, the more uniform it will be across different wavelengths and the less expensive the sensor, the more it will measure the center of the spectrum. It can be assumed that the Hanwell meter used for reference is much more uniform than the three meters in this evaluation, all of which cost 50-100 times less.

Conclusion: Ironically, the accuracy of the meters is inversely related to the price. The most accurate meter was the least expensive generic LX-1010B (\$13), followed by the Dr. Meter LX-1010B (\$19), and the Dr. Meter LX 1330B (\$33). The generic LX-1010B was only 1% over its listed accuracy in all light types except one. The worst performance was in fluorescent tube lighting for all meters, running from 10%-18% inaccuracy. However, most of the readings of the inexpensive meters were greater than the Hanwell meter. Therefore, for museum purposes, using them as a reference to reduce light levels would produce actual light levels that were lower than the target level, not greater, so this is not a concern. Additionally, the practical difference in light levels between, for example, 500 lux and 550 lux (10% error) in most applications is insignificant for smaller museums. In conclusion, any of the meters could serve adequately for museums on a budget. The recommended meter is the least expensive generic LX1010B.

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Generic LX-1010B (\$13)

http://www.ebay.com/itm/New-3-Range-Digital-LCD-50-000-Lux-Meter-Photometer-Luxmeter-Light-meter-LX1010B-/190803954721?pt=LH_DefaultDomain_0&hash=item2c6ccd4c21

Be sure to purchase the 1010B with the LARGE sensor (white circle) as in this photo, not the small one in the photos below. This sensor is probably why the meter performed better than the other two.



Dr. Meter LX-1010B (\$19)

http://www.ebay.com/itm/New-Digital-50000-Lux-Meter-Photometer-Luxmeter-LX1010B-/110579105079?pt=LH_DefaultDomain_0&hash=item19bf073d37

Essentially the same features as the generic LX-1010B but less accurate.



Dr. Meter LX 1330B [different vendor, original one no longer has it] (\$33)

http://www.ebay.com/itm/Digital-Light-Level-Meter-LX1330B-Illuminance-Meter-Measuring-Up-To-200000-Lux-/11044662181?pt=LH_DefaultDomain_0&hash=item19dac713a5

More features than the other two meters, but these are of minimal use for museum applications, especially in light of less accuracy.

Sellers on ebay change quite frequently, as do prices. However, the photos of the meters are a clue as to the manufacturer. Different names may be printed on or used for the same meter sold by different vendors. But there is a good bet that all are made by the same manufacturer and will have the same performance. Be sure to do a search (digital lux light meter would be a good choice) and sort by lowest price with shipping. Then you can look through the list to find the least expensive vendor for the same meter regardless of what it is called. Other sites such as Amazon also may have good prices on the same meters.