

Laser Distance Meters

by William B. Tracy, AIA

For anyone working in the built environment, the ability to quickly and cheaply gather field dimensions in existing buildings is critical to effective and efficient planning and design. The extreme accuracy of CAD has raised the bar for expectations of plan accuracy and the increasing sophistication of tenants demands accurate lease square footages.

Tape Measures are going the way of the T-square

About ten years ago, the laser distance meter was introduced as the first economical alternative to the measuring tape. The first Leica Disto originally cost nearly



\$1,500 and was bulky and heavy (21 oz) to carry around in the field. The bubble level on the Disto in the photo to the left was added by the author and was not part of the unit, which also suffered from short-lived rechargeable batteries. However, for someone who frequently needed to take field measurements, the price was a bargain. It was not

only faster and more accurate than using a tape but also much cheaper because it could be operated by only one person. Add to that the fact that a laser can easily take dimensions in areas where accessibility is difficult (high ceilings and areas cramped with furnishings and equipment) and you have a business case for purchasing a laser distance meter that is hard to ignore.

Recently, the business case for purchasing a laser distance meter has gotten stronger. Competition and volume in the LDM market have driven prices down. You can now purchase an entry-level LDM for under \$400 from many sources. Alternatively, the same \$1,500 will buy a LDM with a host of built-in capabilities including wireless communication with your CAD system. These high-end machines are most valuable to those who spend a lot of time in the field making as-built plans.

For the average design professional that spends a day or two per month taking field dimensions, an entry level LDM is still a huge improvement over a measuring tape and will pay for itself quickly – usually on the first project it is used upon. Below we review three low-cost LDMs: The Leica Disto Lite, the Hilti PD 30 and the Spectra HD-150.

Three inexpensive Laser Distance Meters

All three evaluation units were purchased without the seller knowing that the purpose was to evaluate them. All three were purchased for under \$400 and have been used by the author in the field. All are easy to use, accurate and well-made units from respected makers of surveying or construction equipment. Some other features that all three units share are:

- All are accurate enough for taking the kinds of dimensions required for design, construction, property management and appraisal.
- All can be set to display distances in many different units (meters, feet, inches, fractions etc.)
- All come with bubble levels to help keep the laser beam horizontal.

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- All have functions to measure distance, area and volume
- All have display illumination to make reading possible in dim lighting conditions.
- All have a continuous measurement function for layout work.
- All require a reflective target plate for longer dimensions.
- All will make a lot of measurements using standard double-A alkaline batteries.

There are differences that may influence your choice of which one to buy. It's these differences that we will focus upon.

The Leica Disto Lite

The Leica Disto Lite is a descendent of the original Leica Disto and the least expensive in a family of many alternatives from a major maker of quality surveying equipment. What seems to be an identical LDM is available on Amazon.com as the Keson #731663 Lite LDM for \$350.



Measurement with the Disto is a three-click operation – power on, activate the laser, then take the measurement. This is slightly more time consuming than Hilti or Spectra units that turn on automatically when the measure key is pressed. The Disto Lite has a square end piece that is only good for measuring from flat surfaces, not corners. If this inflexibility is important to you, the other models reviewed (as well as other Disto models) have end pieces that offer more flexibility in measurement locations.

This unit is the only one of the three evaluated with a time delay feature. This feature is useful on a unit that lacks a tripod socket because pressing the measure button has the irritating affect of moving the laser point, especially with long distances.

Perhaps this unit's strongest feature is its simplicity. All its features and functions are obvious from looking at it. There are no codes or key combinations to remember.

The Hilti PD-30

The Hilti PD-30 is the lightest and most compact of the three. It is one of two models available from a respected maker of construction equipment and feels solid and durable despite its small size. Slightly larger than a cigarette pack, you can easily stow it in a guy's shirt pocket or a gal's small purse. It is available via phone (info on Hilti.com) or on Yahoo Shopping for about the same price.



Like the Spectra, it turns on when the measure button is pressed, but a second press of the measure button is required to take the measurement, making it slightly slower than the Spectra but faster than the Disto Lite when starting with the unit turned off. A unique feature is the fold-out spike in the end-

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piece. To measure from a corner (as in the diagonal distance of a rectangular room) you flip out the spike, which offers a lot of flexibility in measuring. The unit automatically compensates for the length of the spike.

The most commonly used functions are obvious from looking at the keyboard. But the user must study the short manual to understand how to use some of its capabilities.

The Trimble Spectra HD-150

The Trimble Spectra HD-150 is a relatively new LDM. Like Leica, Trimble is well known for its line of quality surveying equipment. However, it can be purchased as a “Spectra HD-150” through Yahoo Shopping at a lower cost.



The Spectra is the only one of the three evaluated to have a tripod socket. However, you cannot set the measuring reference point to the socket which limits its utility. The leveling bubble on the spectra unit is a separate piece that can snap on to either the left or right of the top of the unit, which is nice from a flexibility perspective in the field.

There are two end pieces – a multi-function wedge that extends the length of the unit by an inch but has a lot of utility, and a square end piece that rests solidly on the face of a wall but is inflexible, like the Disto Lite. The dimensions in the chart below include this optional wedge end piece.

The Spectra is unique in that pushing the measure button half way activates the laser and a full press of the button takes the measurement. This means that a measurement basically takes one push of the button instead of the two required by the Disto and the Hilti units. This makes measurements seem to happen a lot faster. The lack of a time delay feature can be a limitation if you want to hoist the unit up on a monopod to shoot over obstructions. However, the Spectra HD-150 definitely has the edge with built-in functions, offering max/min and triangular “indirect” measurements found only on the more expensive Disto and Hilti models.

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LDM Comparison Chart

	Leica Disto Lite	Hilti PD-30	Spectra HD-150
Dimensions	5.6" long 2.9" wide 1.8" deep	4.7" long 2.5" wide 1.1" deep	6.8" long 2.8" wide 1.8" deep
Weight (w/battery)	11.2 oz	9.6 oz.	15.7 oz
Typical accuracy	±1/8"	±1/16"	±3/32
Weather resistant	Yes	Yes	No
Maximum range	650 ft	600 ft	500 ft
Time delay release	0 to 60 sec.	No	No
Measure edge	Front or back	Front or back	Back only
Min/max function	No	No	Yes
Triangular function	No	No	Yes
Add (accumulate)	No	Yes	Yes
Memory	None	Previous 5 dims	Previous 20 dims
Bubble level	Right side	Left side	Either side
Battery	2-AA	2-AA	4-AA
Max Measurements	10,000	15,000 min.	30,000
End piece extension	No	Spike	Wedge
Tripod Mount	No	No	Yes
Price paid	\$375.00	\$349.00	\$399.99

This comparison chart addresses only significant differences between the three LDMs. Depending on the kind of measuring challenges you face, you may prefer one of these units over another because of specific features. The Hilti PD-30 is the portability champ but does not have the features of the Spectra HD-150. The Disto Lite lacks flexibility and features but offers simplicity of use that is important when you only pick the unit up occasionally. There is no one size fits all. However, there is no excuse for using a measuring tape (except for the old standard 12 footer for short dimensions) to measure buildings when you consider the advantages of a laser distance meter.

Acoustical measuring devices

There are several inexpensive devices that operate on the principle of sound waves rather than light. These acoustical units are much less expensive (under \$100) than LDMs but are also much less accurate and limited in range. Several even come with a laser pointer to help you aim it, but don't be fooled. It's still an acoustical unit with far less precision than a LDM. Another problem with these acoustical units is that they are easily fooled by echoes from nearby furniture and equipment. The author does not consider them usable for professional field dimensioning. They are only slightly better than counting ceiling tiles and sometimes worse.