



### Features of pulsed laser distance meters

- \* Non contact long range distance measuring capabilities
- \* Several models in the range of 300 meter to 20 000 meter
- \* Several models in the accuracy range of 1 cm to 2 meter over long distances
- \* Eye safe laser technology operating in the infrared invisible spectra
- \* LCD / LED display showing the measured distance for the operator
- \* Several models with integrated compass and inclinometers and RS 232 computer interfaces
- \* Low maintenance needs and long low life cycle costs

Laseroptronix offers several models of pulsed laser distance meters / laser range finders. Ranges differs from 300 meter for the smallest model and up to 20 000 meter for a special military style model. All are eye safe and harmless for the eye.

The most accurate model gives 1 cm in resolution and 5 cm in absolute accuracy up 300 meter in range. The long range models have +- 2 meter in accuracy up to 20 000 meter.

All models are hand held and compact. They have an integrated sight and when the target is in the sight it is only to press the button and the distance appears in the display.

Weight is between 250 grams and 2 kg with integrated battery. Encapsulation is rugged. Some models are water proof and MIL specified. Some models have a built in RS 232 communication with a computer.

LHP and LaserAce systems have a inclinometer and compass options for 3D surveying.

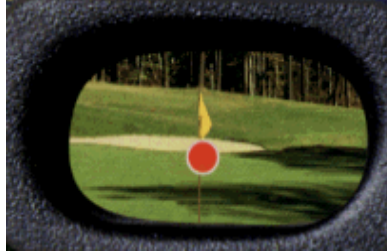
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## LDM series of laser distance meters

LDM is by far the most popular model delivered in many hundreds by Laseroptronix. The price level is attractive and very competitive. Performance is excellent and we are unique in offering a short dead zone of only 4 meter. We can also offer 10 cm resolution up to 100 meter. LDM covers ranges from 600 meter to 1000 meter measured to a gray surface.

LDM units have a built in red point sight making it very easy to aim correctly. The LCD display gives the distances and settings. LDM systems can show meter or yards in scale. Special models have RS 232 interface. ( separate data sheet ).



## LDM 1500 Laser distance meter

This model offers 1500 meter max distance and +- 1 meter in accuracy. LDM 1500 is very robust and rubber coated. It is water proof and designed for demanding out door applications. The model is a binocular design 7x50 where the distance meter electronics are integrated into the binocular. The cross hair aiming system is overlaid inside the optics. Distance is shown in the field of view. LDM 1500 offers several operation modes like see through and rain penetration capability. LDM 1500 is very suitable for marine navigation, police and fire brigade works etc. Spring 2005 we expect to offer a 2500 and 4000 meter version of this instrument . Options like compass and inclinometer will be available as well as a compass



## LDM 10 000 and LDM 20 000 laser range finders

This is a long range binocular style distance meter based on a rugged military design. Range is 10 000 or 20 000 meter on a passive target. These models are eye safe and operates in the IR 1,54 micron spectra. Accuracy is between 2 and 5 meters all over the range. Dead zone is about 80 meter.

These models are water proof and MIL Specified. The distance is shown by a LED display in the field of view. The optics is a binocular style 7x50. Special electronics admits to measure to several reflexes from a split up laser pulse and to see the last pulse distance. There is a built in RS 232 communication port.



## LHP series of laser hypso meters / distancemeters + inclinometers

Laser hypso meter is a special name in Latin for a distance meter with an integrated inclinometer with capability to measure heights. LHP Series is a LDM series with an integrated micro mechanic inclinometer and a processor to calculate values. It is possible to recalculate a horizontal length. It is also possible to point to surfaces at 3 different points and then get the height of the surface. Distance accuracy is like standard LDM 600-1000 series. Height accuracy is about 0,1 degree.

LHP can be switched from Hypso meter function to horizontal meters or just as a distance meter alone. In tree applications accuracy is about 0,5 meter in real values.



## LaserAce 300 distance meter / total station

LaserAce 300 is a highly advanced distance meter. Distance range is up to 300 meter and it offers 1 cm resolution and 5 cm real accuracy all the way. All models have a RS 232 communication port and an integrated inclinometer. The aiming is done by a telescopic sight and a LCD display shows the distance and actual settings.

LaserAce 300 is the perfect surveying system with its combination of accuracy and compactness. There are several software packages available for different applications.

LaserAce 300 can be connected to the optional mono pod system for high accuracy surveying. Software reads values of mono pod and distance meter and combines with GPS data. This admits a full 3D mapping of areas.

## About laser distance meters and range finders

These papers distance meters are based on pulsed technology. The laser transmits a very short and high intensity light pulse. Energy is low so they are harmless for the eye but strong enough so the reflex from the target is detected at very long range. Pulse is in the nano sec area.

The laser is a solid state diode laser in all models except the 10 000 meter and up systems. This is a very robust component giving very long life time ( 10 K-Hours or more ). The long range lasers have a frequency shifted Yag laser operating at about 1,5 micron. The eye is not very sensitive for damage in this wavelength area.

The time from transmitted pulse to received detector signal is recalculated to a distance.

### Things to noticed about laser distance meters.

All distance values needs a solid 90 degree surface for the reflex. Split surfaces like trees and vegetation creates questions about where the system triggered the distance measuring. Angled surfaces spread out the reflex in time and the question is where the distance value triggered.

Max range is calculated to a gray surface which is matt. White surfaces gives better range which can be 20-50% more than spec says. Black surfaces can decrease range so it can be less 50% of what is specified. Matt surfaces increase range and mirror like surfaces reduce range. Water gives no values at all except for the 10 000 meter systems. Wet dark surfaces are also very bad and give reduced range.

Beam diameter increase with distance. Diode lasers have about 2,5 mili radians in divergence ( 2,5 meter at 1000 m ). Output beam is about 25 mm and at 100 meter the diameter is about 200-250 mm in diameter.

Targets with a surface smaller than beam diameter will have effects on specifications.

At shorter range you can often detect smaller targets. Electrical wires of 40 mm in diameter can be detected at 50-100 meter in distance with LDM 600 system.



### Technical specifications of pulsed distance meters with display

Model	LDM 600/800/1000	LDM 1500	LDM 10 000/ 20 000	LHP600/800/1000	LaserAce 300
Range	600/800/1000 m	1500 m	10 Km / 20 Km	600/800/1000 m	300 m
Range/reflex.	1200 meter	2000 meter	20 000 m	1200 meter	4500 meter
Min. Distance	4 meter	20 meter	80 meter	4 meter	4 meter
Accuracy	1 meter	1-2 meter	5 meter	1 meter	5 cm
Resolution	0,1-0,5 m	1 meter	1 meter	1 meter	1 cm
Speed	1-2 sec	2-3 sec	2-5 sec	1-2 sec	1-2 sec
Laser class	Class 1	Class 1	Class 1	Class 1	Class 1
Wavelength	905 nm	905 nm	1540 nm	905 nm	905 nm
Beam diameter	25 mm	40 mm	30 mm	25 mm	23 mm
100 m distance.	25 cm	20 cm	12 cm	25 cm	22 cm
500 m distance.	25 cm	80 cm	50 cm	125 cm	100 cm
Sighting	Red point	Cross hair	Cross hair	Cross hair	Cross hair
Display	LCD	LCD	Led matrix	LCD	LCD
Digits	0-999	0-1999	0-19 999 m	0-999	0-9999
Computer O.	No	No	RS 232	No	RS 232
Height M.	No	No	No	Height meter	Height meter
Encapsulation	IP 44	IP 65	IP 68	IP 44	IP 68
Casing	Macrolon	Metal+rubber	Aluminium	Macrolon	Macrolon
Battery	9 Volt	Pen light cells	Pen light cells	9 volt	Pen light cells

### Options and accessories to distance meters

Brackets and mounts, batteries and chargers

Transport casings and external housings

Computer interface module to LDM 600-1000 and LHP series. RS 232 communication

Mono pod systems for Laser ace series making this as a reflector less total station

Software to Laser ace for 3D mapping and 3D applications

Camera unit to grab and store readings and images of the measured area

Pls. see our other information papers about distance meters with RS 232 interface and high accuracy shorter range distance meters.

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