

LASER RANGEFINDER MOUNTABLE ON A HAND-HELD WEAPON

Main Technological Area —> Optoelectronics

Keywords—> View, Laser, Ranging, Rangefinder, Targeting, Aiming, Firing, Tracking, Video

A rangefinder is a device for measuring distances, configured to emit a LASER pulse train towards a target, measure the flight time of each LASER pulse from the moment of emission to the moment of its reception and calculate the distance of the target based on the measured flight time.

The present invention concerns a LASER rangefinder for hand-held weapons having a single lens and an optical splitter, which is able to calculate target distance independently of the saturation condition on its receiver stage.

TECHNICAL SPECIFICATIONS

In order to contain the bulk of the LASER rangefinder below an acceptable limit to allow it to be mounted on a hand-held weapon, it has been thought to simplify the rangefinder's optical unit by eliminating one of the two lenses, using the remaining lens for both the emission and the reception of pulses and adding an optical prism to deviate the pulse emitted by the emitter stage to the lens and to route the pulse received from the same lens to the optoelectronic receiver device.

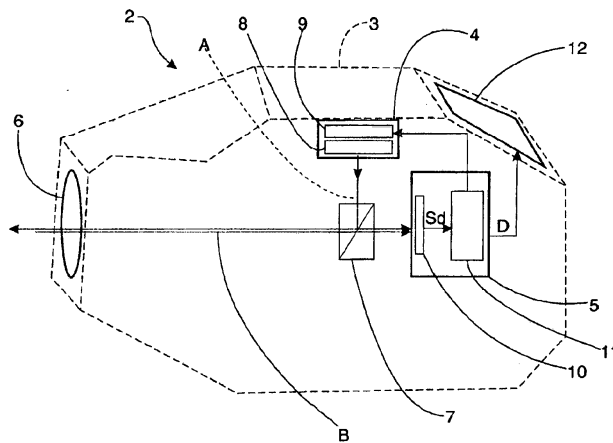


Figure 1 – Representative system diagram

However, if on the one hand the elimination of a lens and the introduction of the optical prism, indicated as "optical splitter", considerably reduces the overall bulk of the rangefinder and makes it suitable for mounting on a hand-held weapon, on the other hand this architecture causes a temporary state of saturation in the receiver stage on every pulse emission, which does not allow the target distance to be calculated using the currently known methods of calculation unless the measurement times are lengthened, this latter situation being unacceptable when it is necessary to determine the distance of a moving target.

The object of the present invention is therefore that of making a LASER rangefinder for hand-held weapons having a single lens and an optical splitter, which is able to calculate target distance independently of the saturation condition on its receiver stage. This is possible by processing the received signal in order both to compensate the effects of the saturation of the receiving sensor (often determined by the immediate return of the pulsed signal through the splitter) and to determine the noise thresholds that are reliable for a correct measurement.

INNOVATION/ADVANTAGES

- Fast, reliable target distance calculation
- Minimizing operator reaction time
- Lightweight system for hand-held operations
- Possibility to easily retrofit existing systems

FIELDS OF APPLICATION

<i>Sports</i>	Target shooting, archery, golf
<i>Hunting</i>	Advanced instruments for hunting (es. Safari)
<i>Engineering</i>	Geodetic surveys, structural measurements, dendrometry, forestry
<i>Photography/Cinematography</i>	Documentaries, action scenes, remote controlled steadycams

PATENT INFORMATION

Priority Date – 2010-06-22

Priority Code - ITTV2010A000091A

IPC Codes - G01S17/10, F41G3/06

Active worldwide applications

ITALY - IT1400625B1; **filing date:** 2010-06-22; **grant date:** 2013-06-14

EPO - EP2585788; **filing date:** 2011-06-22; **grant date:** 2014-05-28

National Extensions: Germany – France – Turkey

Leonardo internal code

LDO-0309