LAS

Field tester of laser range finders

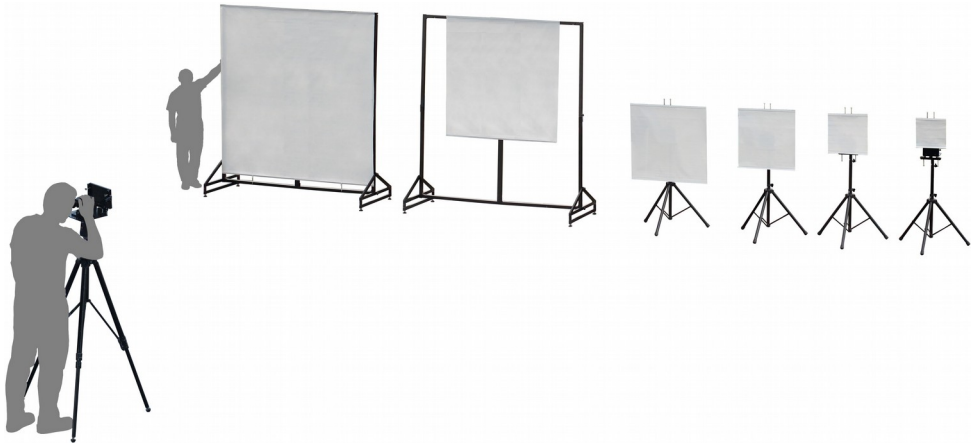

Fig. 1. Photo of the LAS test station

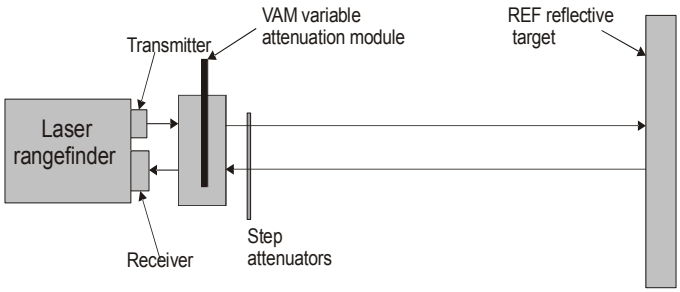

Fig.2. Block diagram of the LAS test system

BASIC INFORMATION:

LAS station is a test station designed to enable final performance tests of laser range finders at field conditions. The station is offered in form of a series of targets of different reflectivity/size and tools to control attenuation of pulses emitted by tested LRF. In detail, LAS test station built from following blocks: set of REF reference reflective targets of known reflectivity, MBF mobile frame, MTR portable tripod, VAM variable attenuation module, and a set of EA external attenuators.

Tests of LRF done using LAS are typically done using two methods: 1) shooting to a reference target at variable distance, 2)shooting to a reference target at fixed distance through a medium or regulated transmission.

In case of the first method, tested LRF is shoot into direction of a reference reflective target located at a distance that is gradually increased until LRF starts to fail to generate proper distance readout.

In case of the second method the LRF is shoot into direction of a reference reflective target placed at some fixed distance (typically from about 0.5 to 1 km), attenuating radiation emitted by the LRF using VAM variable attenuator module or using EA external attenuators, and checking at what attenuation level the LRF stops giving proper distance indications. This way enables to measure Extinction Ratio parameter understood as an maximal attenuation (in dB) when tested LRF is still capable to work.

In case of both methods targets of different size and reflectivity are used depending on technical specifications of tested LRFs.

Both methods enable precision prediction of possible operational range of tested LRFs but the second method is recommended as generates more repeatable results due to lower sensitivity to atmosphere conditions.

LAS station can be used for testing all main types of LRFs (monopulse/multipulse, typical wavelengths: 910nm, 1064nm, 1550nm, 1530nm, 1570nm).

LAS test station is also a perfect tool to calibrate laboratory test stations to be used for direct or indirect measurement of maximal operational range of LRFs. It is recommended to recalibrate LTE/LTE test stations manufactured by Inframet using LAS station.

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TEST CAPABILITIES

- Direct tests of operational range
- Measurement of ER at field conditions (final performance tests)
- Boresight errors
- Recalibration of LTE/LTE test stations for testing LRFs at laboratory conditions (measurement of ER)

WHY LAS?

Tests at field conditions look apparently easy to be done using ad-hoc targets and optical attenuators. However, field tests that could generate repeatable, accurate results cannot be using improvised test stations. Professional test stations characterized by three important features (1) Near perfect Lambertian diffusive coating on the reference target of precisely known reflectance 2) A two channel attenuation system of large optical aperture and ultra high regulation dynamic (at least 40dB), 3) User-friendly equipment to be easily operated at field conditions) is needed.

FEATURES:

- Flexible, easily transportable reflective targets
- Lambertian diffusive coating
- Set of targets of different size and known reflectivity
- Ultra high regulation dynamic of the attenuation system
- User friendly method to regulate attenuation

PARAMETERS

Table 1. Technical specifications of LAS test station

Parameter	Value
Number of REF reflective targets	5
Dimensions of REF reflective targets	2.3x2.3m (standard NATO target), 1.6x1.6m, 1x1m, 0.5x0.5m, 0.37x0.37m
Reflectance of REF target	Three levels depending on customer requirements Details in Table 2
Lambertian diffusive coating	Yes
Calibrated wavelengths	910nm, 1064nm, 1550nm, 1530nm, 1570nm
Range of VAM variable attenuator	at least 3dB
Range of exchangeable step attenuators	at least 40 dB
Recommended working conditions	Temperature in range -5ºC to +45ºC Wind: not more than 10 km/h
Weight	LAS set net weight - about 65kg LAS set with reusable boxes - about 101kg LAS set with reusable boxes inside transport boxes - about 155kg

Table 2. Reflectance of REF reflective targets at different spectral bands

Reflectance type/wavelength	910nm	1064nm	1530-1570nm
Low	0.33	0.32	0.26
Medium	0.42	0.41	0.33
High	0.52	0.5	0.4

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CONTACT:

Tel: +48 604061817 Fax: +48 22 3987244 Email: info@inframet.com

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