

Seeing Through Cloud: Imaging LIDAR

A highly novel approach to a Compact Robust Imaging Lidar System is under development as a powerful tool for detecting and identifying a range of targets through fog and cloud.

The compact system has been demonstrated to be capable of target detection and identification far beyond the limits of normal capabilities of eye and/or camera capabilities under conditions where visibility is highly challenged by Fog or Cloud.

The Lidar employs a near-UV Laser (355 nm) with a short-duration pulse as the source.

It has been demonstrated that, since the scattering spectrum is virtually independent of wavelength (near UV through SWIR), to obtain "vision" through fog and cloud, a near-UV system has major advantages due to the combination of eye safety and the maturity of laser and imaging photon detector technologies.

A novel photon-counting, range-gating detector is employed with a resolution at worst limited by the pulse duration of the laser – 7 ns or equivalent to 1 metre.

Such a detector provides the ultimate in terms of performance (signal to noise ratio) allowing the reconstruction of precise information on targets that are otherwise totally invisible.

Depending on application of the user, the laser power and laser size can be adapted if necessary to increase the maximum operational range.

Imaging Lidar: Target Detection and Identification through Mist, Fog and Cloud

Target	Max.Detection	Max. Recognition
Vehicle	40 km	14 km
Human	10 km	5 km

Technical Specifications	
External Dimensions	150mm (H) x 200mm (W) x 400mm (L)
Weight	8 – 10 kg
Power: Internal Rechargeable Battery	3 hours continuous use
Typical Field of View	8°x 5° (adaptable on request)
Penetration Range in Fog and Cloud:	
Target Determination	Up to 50 * Optical Thicknesses
Target Identification	More than 10 * Optical Thicknesses
Resolution on Target at 5 km Range	2 m * 2 m horizontal, ~ 1 metres range

Imaging Lidar: System Parameters

Imaging Field of View	8°x 5°
Focus:	50m to Infinity
Controls:	On/Off
Focus:	Automatic
Data Port:	Data Export Port - Select from USB3 or LVDS or HD-SDI (Specify at time of order)
Mounting:	Tripod or Skeleton frame work version for gimbal or UAV vehicle mounting
Charger:	Mains / Vehicle (12 / 24 V)
 <u>Environmental</u>	
General:	IP rating: IP 67
Operating Temperature:	-30°C to +50°C
Storage Temperature:	-40°C to +60°C
Shock and Vibration:	Per MIL-STD-810F
EMI:	Per MIL-STD-461
 <u>Options</u>	
	<ol style="list-style-type: none">1. Head mounted screen2. Remote viewing – images may be transmitted to a remote screen3. Providing remote viewing for a range of applications