

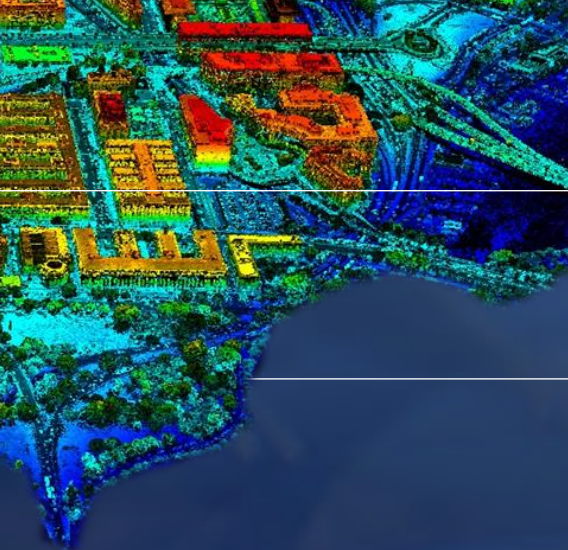
Sunex

Excellence in Digital Imaging Optics

LiDAR and ToF Lenses

20+ year track record of success in taking customer concepts from design through mass production.

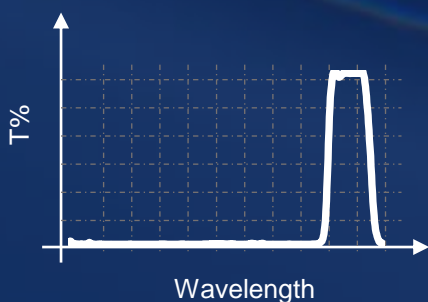
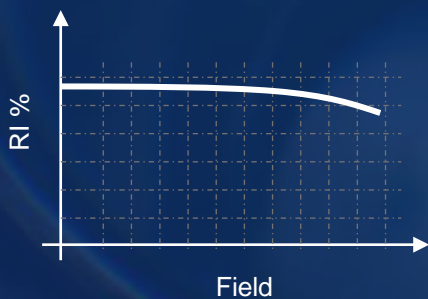
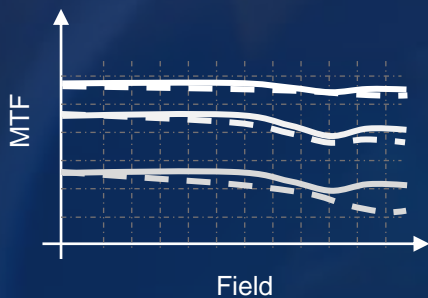




Sunex LiDAR and ToF lenses

Time-of-Flight

ToF or Time-of-Flight refers to a measurement principle based on a signal leaving a source and a detector measuring the time it takes for a detector to receive the same signal back. The distance to any given object can be determined by factoring in the speed of the signal itself. Optical systems play a critical role when the signal is based on light, and the most common systems are referred to as ToF-cameras and LiDARs. ToF-cameras illuminate a scene with a modulated signal, and the phase shift between the send and receive signal determines the depth ranging. LiDAR stands for Light-Detection-and-Ranging and uses the delay between send and receive of a single laser pulse to determine depth. Sunex is offering solutions for both types.



Applications

Many industries and applications have leveraged these technologies for decades, from topology and meteorology to medical and industrial robotics applications. In recent years ToF-cameras and LiDARs have also entered high-volume consumer and automotive markets. Especially for LiDAR applications, we see many established and new companies pushing the boundaries to reduce costs and advance performance for long- and short-range LiDAR systems.

Designed for Mass Production

Often it is not the challenge to create a design “that works” but to find a solution that can scale to mass production, meeting price targets, optical performance, mechanical constraints, and quality requirements. Sunex has decades of design and manufacturing expertise, and all of our ToF- or LiDAR lenses are designed within the context of high-volume manufacturability.

All graphs are for illustration purpose only. The individual lens performance can be different.

Type	Format	EFL	FOV	F/#	TTL	Features
ToF Lens	1/3"	4.5	68	1.5	27	Hybrid Design, various Filter options
ToF Lens	1/2.8"	3.3	123	1.4	28	Wide FOV, various Filter options
ToF Lens	1/3"	6.1	59	1.6	12	Short TTL, various Filter options
ToF Lens	1/3"	4.6	76	1.7	21	Short TTL, various Filter options
LiDAR Receiver	1.5"	41	35	1.4	57	Long range, narrow FOV, low straylight
LiDAR Receiver	1"	8	≥120	1.3	50	Hybrid Design, Short range, wide FOV
LiDAR Receiver	2/3"	25	25	1.0	52	Long range, narrow FOV

Table only shows a selection. Additional ToF and LiDAR lens options are available.

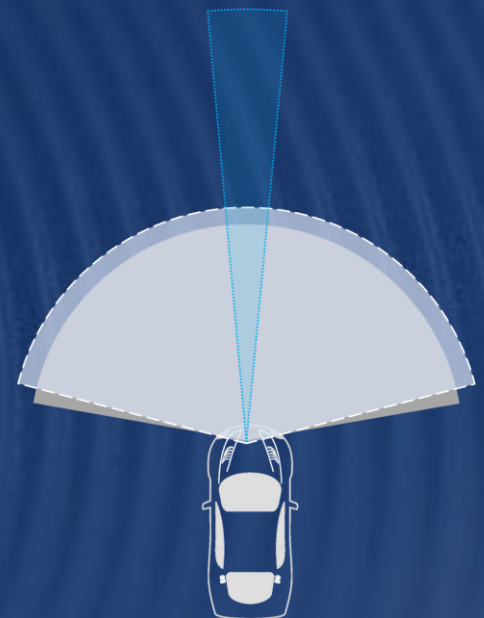
Miniaturized SuperFisheye™


With the recent advancements to expand the LiDAR technology to non-spinning short-range or near-field, LiDARs the requirements shifted to an increase in horizontal (HFOV) and vertical field of views (VFOV), smaller F/#, and a decrease of the overall form-factor.

Sunex pioneered and coined the term Miniaturized SuperFisheye™ lenses in the automotive industry. We are now applying the same design concepts and experiences to support our customers in advancing their LiDAR product range.

Automotive Qualified

With almost two decades as a qualified automotive supplier to our global customer base, we know what is required to design and manufacture a lens that has stable performance over a wide temperature range and passes automotive reliability and environmental testing. Whether we improve existing work through Design for Manufacturing (DFM) and Design to Cost (DTC) cycles or start with a blank sheet design to meet all requirements, the end goal is always to deliver on time with consistent quality.



-  ToF Camera
-  Short Range LiDAR
-  Long Range LiDAR

Create 3D depth perception with

LiDAR lenses

Consulting – Design – Manufacturing - Support



SUNEX INC.

3160 Lionshead Ave, Suite B
Carlsbad, CA 92010, USA
Tel: +1 760-597-2966
sunex.com/contact