

List of Athermal IR Lenses for LWIR Thermal Cameras

Introductions:

- Aspherical and binary optical technology adopted in design
- Various types of IR materials are used
- Some stocked modules available in fast delivery and low cost

It is essential to maintain focus over wide change of the environmental temperature in some applications, the optical and mechanical design of the lenses will maintain the focus position passively, without power, during the changes of the environmental temperature. Hangzhou Shalom EO offers the athermal lenses for LWIR uncooled FPA detectors, the designed modules are listed and the custom modules are available upon customer's request.

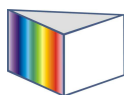


Modules or Types:

Designed for detectors:

640x512, 640x480, 384x288, 320x240, 160x120

No.	Module	Focal length (mm)	F #	Design Types	Flange Back Dist (mm)	Mechanical Connector	More Info
1	L4.3F1.0	4.3	1.0	Fixed	19.5	M25x0.5	More>>
2	L7.1F1.0	7.1	1.0	Fixed	19.5	M25x0.5	More>>
3	L8.0F1.0	8.0	1.0	Fixed	19.5	M25x0.5	More>>
4	L9.0F1.05	9.0	1.05	Fixed	/	M25x0.5	More>>
5	L10.0F1.0	10	1.0	Fixed	19.5	M25x0.5	More>>
6	L12.3F1.0	12.3	1.0	Fixed	19.5	M25x0.5	More>>
7	L12.8F1.0	12.8	1.0	Fixed	/	M25x0.5	More>>
8	L13.0F1.0	13.0	1.0	Fixed	19.5	M25x0.5	More>>
9	L13.0F1.1	13.0	1.1	Athermalized	12.5	M16x0.5	More>>
10	L15.0F1.0	15.0	1.0	Fixed	19.5	/	More>>
11	L17.0F1.0	17.0	1.0	Fixed	19.5	M25x0.5	More>>
12	L19.0F0.9	19.0	0.9	Fixed	18.5	M25x0.5	More>>



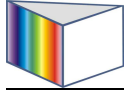
13	L19.0F1.0	19.0	1.0	Fixed	19.5	M25x0.5	More>>
14	L19.0F1.0-1	19.0	1.0	Athermalized	/	M25x0.5	More>>
15	L19.0F1.2	19.0	1.2	Fixed	/	M25x0.5	More>>
16	L20.0F1.0	20.0	1.0	Fixed	13	M28x0.75	More>>
17	L25.0F1.0	25.0	1.0	Fixed	19.5	M25x0.5	More>>
18	L27.0F1.0	27.0	1.0	Fixed	19.5	M25x0.5	More>>
19	L32.0F1.0	32.0	1.0	Fixed	17.6	M34x0.5	More>>
20	L35.0F0.85	35.0	0.85	Fixed	20	M54x1	More>>
21	L35.0F1.0	35.0	1.0	Fixed	17.5	M25x0.5	More>>
22	L35.0F1.2	35.0	1.2	Fixed	19.5	M25x0.5	More>>
23	L38.0F1.0	38.0	1.0	Fixed	18.3	M34x0.5	More>>
24	L40.0F1.0	40.0	1.0	Fixed	/	M36x0.75	More>>
25	L40.0F1.6	40.0	1.6	Athermalized	/	M20x0.5	More>>
26	L50.0F1.2	50.0	1.2	Fixed	17.6	M34x0.5	More>>
27	L50.0F1.2-1	50.0	1.2	Athermalized	20.65	/	More>>
28	L60.0F1.25	60.0	1.25	Fixed	18.3	M34x0.5	More>>
29	L75.0F1.0	75.0	1.0	Athermalized	17.5	M34x0.5	More>>
30	L75.0F1.2	75.0	1.2	Fixed	17.6	M34x0.5	More>>
31	L75.0F1.4	75.0	1.4	Fixed	17.6	M34x0.5	More>>
32	L95.0F1.5	95.0	1.5	Fixed	13	M34x0.5	More>>
33	L100F1.2	100	1.2	Fixed	17.6	M34x0.75	More>>
34	L100F1.4	100	1.4	Athermalized	/	M34x0.75	More>>
35	L100F1.5	100	1.5	Fixed	17.6	M34x0.5	More>>

Note 1: The FOV(H) means the horizontal field of view, FOV(V) means the vertical field of view, the FOV(H) and FOV(V) value in above list are calculated by 384x288-25μm FPA detectors.

Note 2: The mechanical connector and flange back distance can be changed upon customer's request.

Features:

1. The mechanical or optical compensating techniques have been used in the design, which would eliminate the focus drifting for the change of environmental temperature.
2. Aspheric Technology and Binary Optics Technology are used in design, which effectively reduce the spherical aberration, distortion and other various aberrations, achieve athermalization design and reduce the number of needed lens elements, lower the cost.
3. Various type of the infrared materials (like Ge, ZnSe, ZnS,AMTIR ect.) are used in the lenses, which would successfully eliminate the aberration of the image and improve the quality of imaging, especially for the large diameter telephoto lenses.



4. Advanced equipment and machines are used to process the infrared materials optics: ultra-precision single point diamond processing machine to achieve the precision aspheric in 3nm, diffractive surface processing equipment to process the Ge, ZnSe, ZnS and AMTIR materials.
5. Different types of coating are made on the lens optics: high-efficiency anti-reflection coating (or high-efficiency AR), durable anti-reflection coating (or Durable AR) and diamond-like hard carbon coating (or DLC coating).
6. Complete quality assurance system Within our quality system, we works out a series of specific craftworks and develops a strict test procedure to guarrantee the quality of products.