

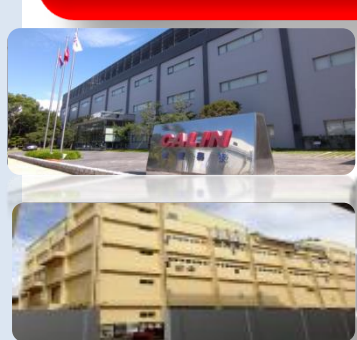
CALIN TECHNOLOGY CO., LTD

Company Profile



Company Overview

Taichung HQ
Plant 1 &
Plant 2



*Chairman &
President*

Mr. Chia-Pin Liu

CEO

Mr. Chester Chiang

Established

December 2002

IPO

November 2012

Capital

\$46M (USD)

Employees

700

2023 Sales
Revenue

\$30.8M (USD)

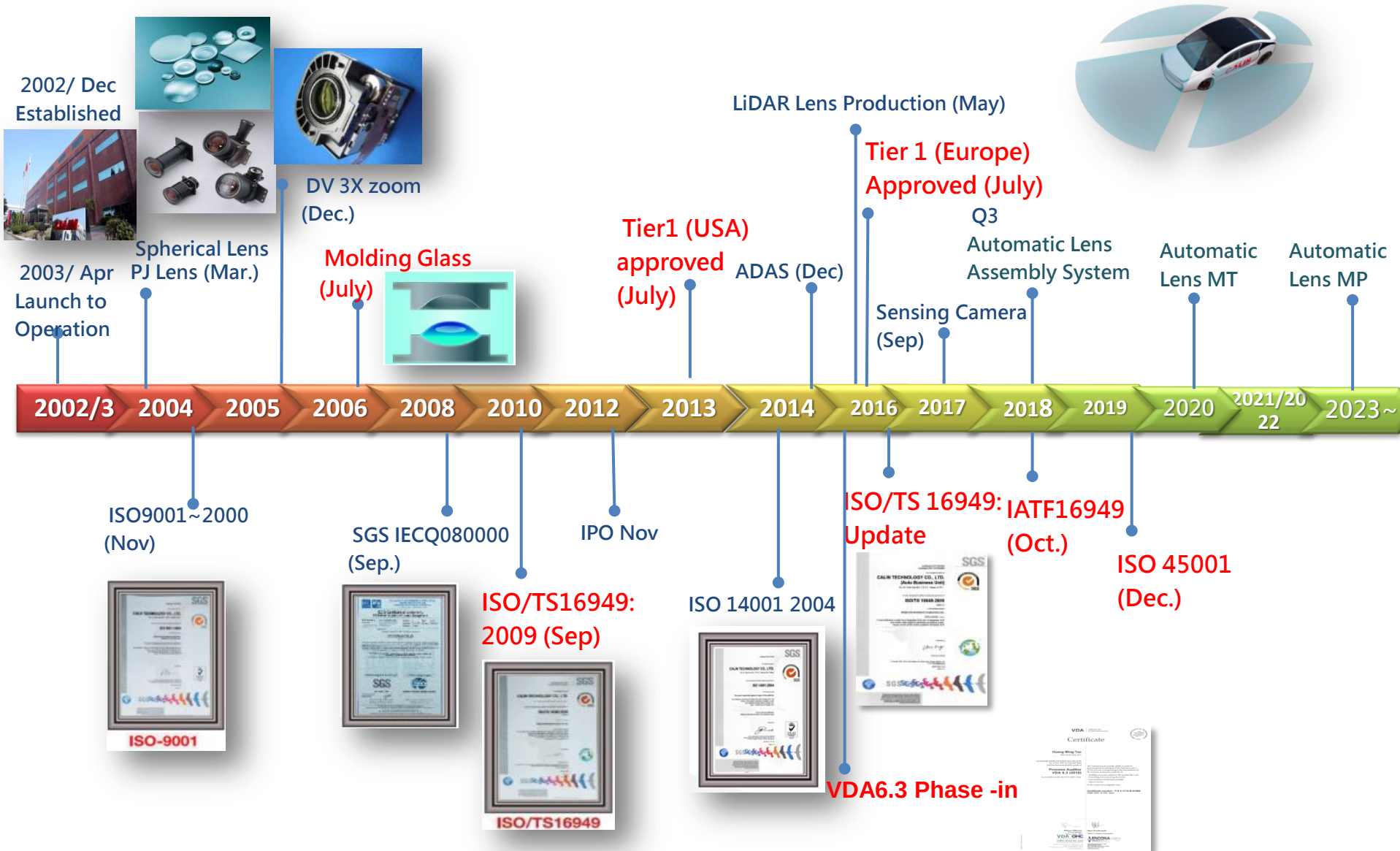
Transportation:

Taipei -> Taichung: 160KM

Car Driving: 2 Hours.

THSR: 1 Hour.

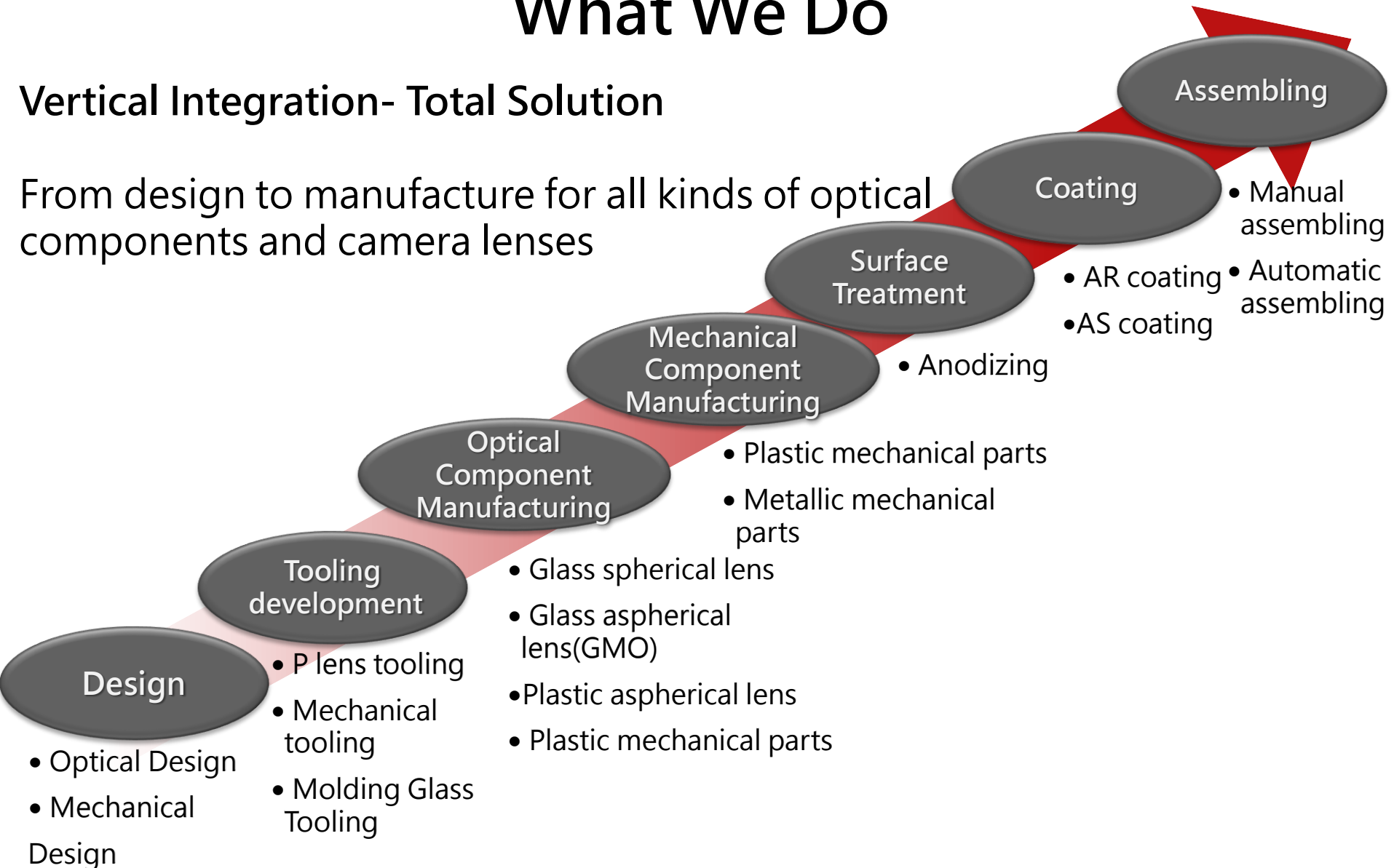
Company Milestone



What We Do

Vertical Integration- Total Solution

From design to manufacture for all kinds of optical components and camera lenses



Product Applications



Automotive

- Viewing Camera Lens
- ADAS Sensing Camera Lens
- Autonomous Camera Lens



Day/Night Vision Monocular/Binocular

- Optical Lens Element
- Night Vision Lens
- Thermal Image

Consumer

- Teleconference Camera Lens
- Sports Camera Lens
- Home Monitoring Camera Lens
- Drone Lens



Surveillance & Security

- IP Camera Lens
- Doorbell Camera Lens
- Access Control Camera Lens

Projector

- Industrial Projector Lens
- Consumer Projector Lens



Product Categories

Optical Component



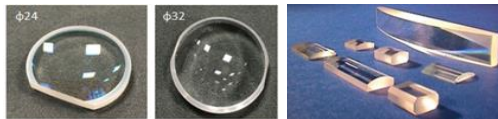
Spherical Glass Lens



Molding Glass



Aspherical Plastic Lens



Cylinder Glass Lens

Mechanical Component



Plastic Mechanical parts



Metallic Mechanical parts

Lens Assembly



VIS & LIR Lens

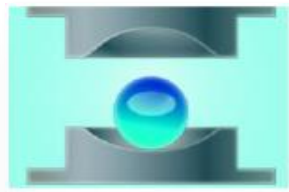
In House Manufacturing Capacity

	Grind Glass	Plastic Lens	Molding Glass	Lens Assembly	Car Lens	Mold Machine
Size	Φ3mm ~ 100mm	Φ2mm ~ 100mm	Φ1mm ~ 100mm	Max. Φ150mm	Customized	30-180 Tone
Monthly Capacity	2KK Lens (Φ20mm)	20KK (Φ20mm)	2.5KK (Φ20mm)	350K PCS	500K	10 Sets
Clean room	10K	10K/1K	1K	10K	1K	1K

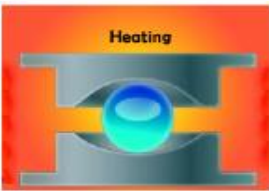
Molding Glass Aspherical Lens



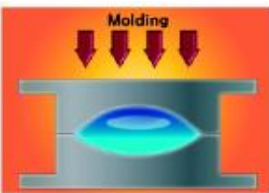
GOB



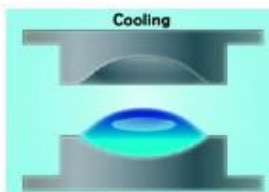
Ball



Heat up



Press



Cold



Depart



BALL



PREFORM

Item	Capability
Diameter	Φ1mm ~ Φ100mm
Size (Thickness Tolerance)	Φ <3mm (+/- 0.005 mm) Φ 3mm~17mm (+/-0.015 mm) Φ >17mm (+/- 0.02 mm)
Roughness	< 3nm
Decenter	Φ <20mm (< 5 um) Φ <6mm (< 3 um)
Cosmetic	40/20 (by Material & Size)
Hard Coating	Filtered Cathodic Vacuum Arc
Capacity (pcs/M)	< Φ20mm. 2.5KK (Now)

Diameter(mm)	Equipment
Ø 1-5	40 sets
Ø 5-34	24 sets
Ø 34-100	1 set

Glass Lens Fine Grinding Automation Processing Line



Fine Grinding Automation Processing Line (Made in Japan)

Advantages:

1. Numerical control equipment
2. With precision control of processing thickness within $\pm 0.01\text{mm}$ tolerance.
3. Lens element fine grinding processing 2 surfaces (R1/R2 surface), and fine polishing are produced by one machine.
4. To have cleaning process after processing station.



Optical Injection:

- Diameter : $\Phi 2\text{mm} \sim \Phi 100\text{ mm}$
- Max output: 15,000,000 pcs/Month
- Class 1000 clean room

Plastic Lens

Machine	24 sets (30T~150T)
Capacity (pcs/M), Now	$\Phi < 20\text{mm}$, 15KK $\Phi > 20\text{mm}$, 5KK
Capacity (pcs/M), Y2022	$\Phi < 20\text{mm}$, 20KK $\Phi > 20\text{mm}$, 5KK

Mechanical Injection

- DSL Barrel / Max Output : 12,000,000 pcs/Month

Machanical Parts

Machine	38sets (30T~180T)
Material	PC + Glass Fiber.....

Precision Machining Capability



Equipment	Brand	Axis	Qty	Process Accuracy	Roughness
Ultra Precision Machine	Moore UPL-450	3	5	1nm	< 5nm
	Moore UPL-250	3	1	1nm	< 5nm
Ultra Precision Machine	Toshiba ULG-100D HYB	5	4	1nm	< 3nm
	Toshiba ULG-100F (S)	4	2	0.1nm	< 1nm



HAUSER H35-400



YASDA YBM 950V Ver.III

Moore UPL-450



Precision Processing Products

Turning & Milling Compound Machining

- High-Precision Lens Barrel Processing
- Spacer/Retainer/Fixture Processing
- Special Material Processing
 - Aerospace Material INVAR
- Various cylindrical turning products



In House Coating Capability

Coaters:

Coaters	Q'ty	Information
Shincron	8	1300mm x 4 850mm x 4
Optorun	3	1350mm x 3
Lung Pien	3	1300mm x 3



Automatic Turnover

Coating Reliability:

Item	2020	In progress
G1 abrasion 2H Pencil 0.5Kg	500 Cycle	1000 Cycle
Salt spray 35°C±2°C	960HRS	1200 HRS
UV Testing	960 HRS	1200 HRS
Water repellent	>100°	>110°



Roadmap-Drone

Application	2024	2025	2026
Main Cam	3.7X Optical Zoom Lens D40~10(f11.8~43.3mm)_1/2" F2.8~4.8_48M(8G+1GM) IMX586	12X Tele Lens D8(f68mm)_1/1.55" F4.0_50M(G+P) OV50E40 Wide Angle Lens D85(f24mm)_1/1.3" F1.9_50M(G+P) OV50H	
Thermal	Thermal Lens H34(f13mm)_VGA 654*512-12μm F1.2 Focus distance : 2m~∞ TBC	Therma Lens H49(f9.1mm)_VGA 654*512-12μm F1.0 Focus distance : 2m~∞ TBC	
Navigation	Obstacle-Avoidance Lens V200(f0.87mm) @ Ø7.0 F1.8_8M TBC	Obstacle-Avoidance Lens V180(f1.4mm) @ Ø4.05 F2.0_2M TBC	
Low-Light Night Vision		Low light Lens V195_@ Ø9.6 F1.8_1M TBC	

Mass production

Developing

Planning

* Marked(C) represent custom lens

LWIR & LRF Roadmap



LWIR Application



Automobile



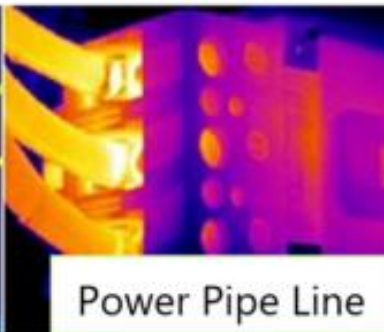
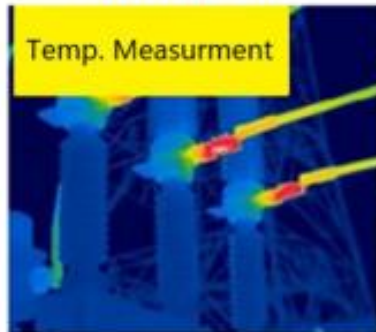
Surveillance



Military



Industrial



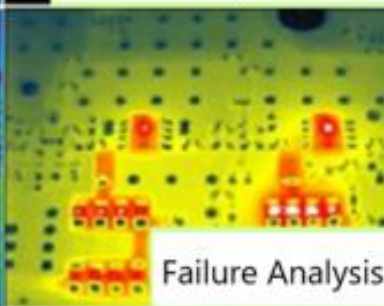
Power Pipe Line



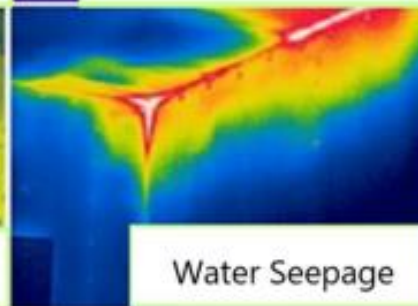
Thermal Insulatuon



Quarantine



Failure Analysis

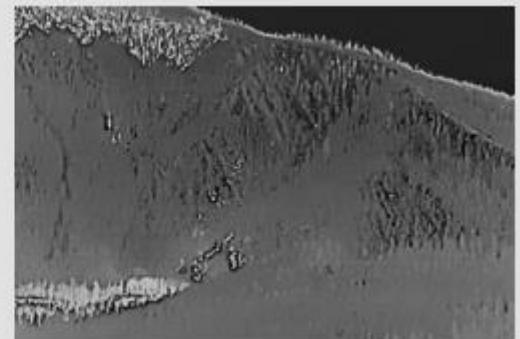
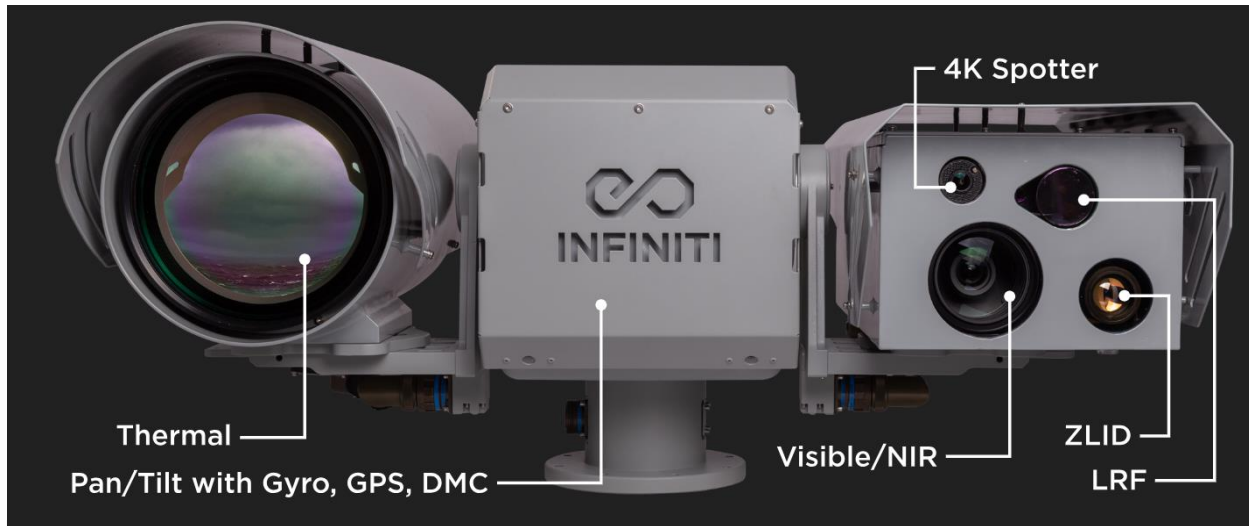


Water Seepage



Industrial Inspection

PTZ



LWIR (Fix)Module (Customize)

CALIN						
Item		LWIR				
Sensor Type		640*480				
Active Area (H x V)		7.68mm* 5.76mm				
Pixel Size		12 um				
EFL		7.5mm	9.1 mm	19mm	25mm	35mm
Fno		1.0	1.0	1.0	1.0	1.0
Field of View	HFOV	54°	46°	23°	18°	13°
	VFOV	42°	24°	17°	14°	10°
Relative Illumination		>85%				
FBL		>=7.5 mm	>=6 mm	>=6 mm	>=7.5 mm	>=7.5 mm
Package Diameter		M34 p0.5	M18 p0.5	M19 p0.75	M25 p0.5	M34 p0.5
Wavelength Range		8~12 um				
Construction		2G or 3G				
The Material of Barrel		AL				
Operating Temperature Range		-40° C~ +80° C				
Storage Temperature Range		-50° C~ +85° C				

LWIR (Zoom) Module

Specification	Calin-1	Calin-2	Calin-3
Focal Length	13-78mm	13-45mm	20-100mm
F number	0.8-1.2	0.8-1.05	0.8-1.2
FOV	33 °*27 °-5.6 °*4.5 °	33 °*27 °-9.7 °*7.3 °	22 °*17 °-4.4 °*3.5 °
Detector	640*512	640*512	640*512
Pixel Size	12um	12um	12um
Working Temperature	-40 °~70 °	-40 °~70 °	-40 °~70 °
Optical Zoom	6X	3X	5X
Digital Zoom	2X/4X/8X/16X	2X/4X/8X/16X	2X/4X/8X/16X
FPS	30Hz	30Hz	30Hz

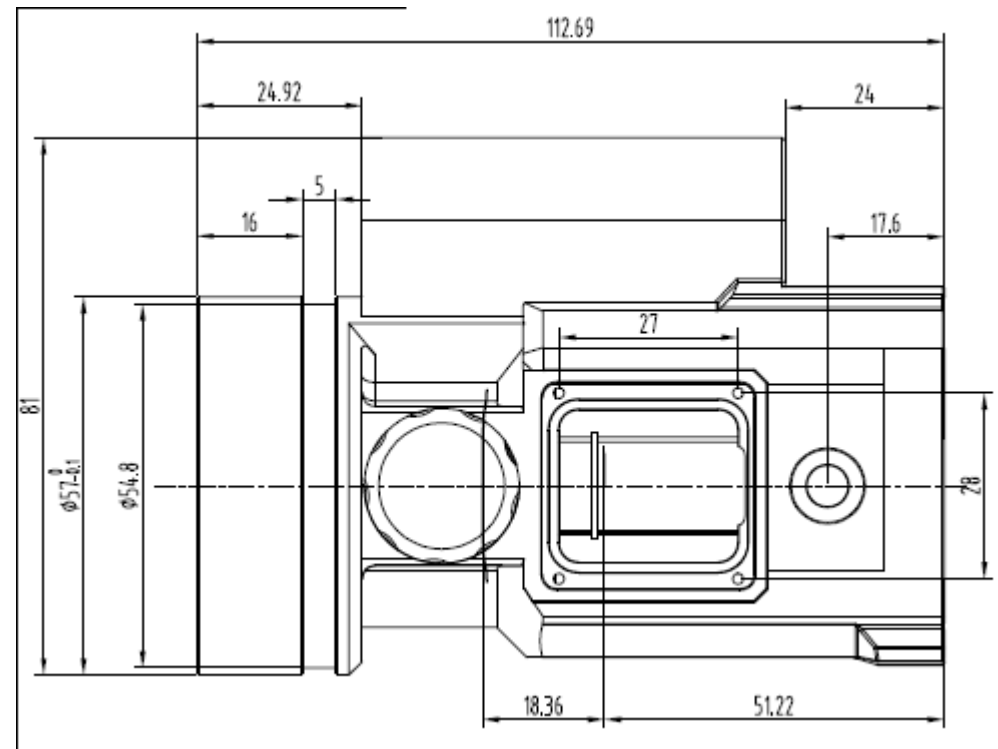
LRF Specification

	Model			
Items	CA2K	CA3K	CA5K	CA10K
Measure Range	5 ~ 2,000 meters	5 ~ 3,600 meters	5 ~ 5,000 meters	5 ~ 10,000 meters
Ranging Accuracy	±0.4m ± 0.05 % * distance	±0.4m ± 0.05 % * distance	±0.4m ± 0.05 % * distance	±0.4m ± 0.05 % * distance
Laser Wavelength	905±20nm	905±20nm	1535±20nm	1535±20nm
Laser Power	Class 1, <1mW	Class 1, <1mW	Class 1, <1mW	Class 1, <1mW
Standby Power Consumption	≤ 200mW	≤ 200mW	≤ 2W	≤ 2W
Measuring Power Consumption	≤ 900mW	≤ 900mW	≤ 5W	≤ 5W
Supply Voltage	3.6V~5V	3.6V~5V	10V~14V	10V~14V
Weight	12.5g	25g	85g	145g
Size (mm)	27.8*26.3*13	49.3*40.5*25.7	62*43*32	87*67*46
Communication protocol	UART/TTL			
Operation Temperature	-20°C ~ 80°C			
Storage Temperature	-40°C ~ 80°C			
Compliance	RoHS directive (Restriction of Hazardous Substances) and Reach directive (Registration, Evaluation, Authorization, and restriction of Chemicals)			
* Applies for well reflectivity target over 90% reflection (e.g: Kodak whiteboard), 25°C, with a low reflectivity target, could decrease measuring range and increase errors which may defer by target and environment situation.				

Gimbal

Specification	30x EO/ IR/LRF Ai 3-Axis Gimbal Camera	30x EO/2X IR/LRF Ai 3-Axis Gimbal Camera
Input Voltage	12~36V	12~36V
Power	<50W	<50W
Weight	<1700g	<1700g
Dimension	150*150*220mm	150*150*220mm
Operating Temp.	-10~70 °C	-10~70 °C
Storage Temp.	-20~70 °C	-20~70 °C
Memory Card	Micro SD	Micro SD
Interface	RJ45 Ethernet(IP)	RJ45 Ethernet(IP)
Gimbal Range		
Angle Vibration	±0.08°	±0.08°
Control Range	Tilt:+45~-100° ; Pan:360°	Tilt:+45~-100° ; Pan:360°
Structure Range	Roll:+45~-45° ; Tilt:+45~-90°	Roll:+45~-45° ; Tilt:+45~-90°
30X EO		
CMOS	1/2.8” SONY	1/2.8” SONY
Optical Zoom	30X	30X
Digital Zoom	16X	16X
Resolution	3840x2160@30fps	3840x2160@30fps
Pixel	8M	8M
Mini Illumination	Color:0.009Lux	Color:0.009Lux
	B&W:0.004Lux	B&W:0.004Lux
IR		
Sensor	non-color LWIR	non-color LWIR
Optical Zoom	fix	2X
Digital Zoom	16X	16X
Resolution	640*480; pixel Size12um	640*480; pixel Size12um
LRF		
Wavelength	905nm	905nm
STD Target Range	20~3600M	20~3600M
Accuracy(m)	0.5±0.01%*distance	0.5±0.01%*distance
Eye Safe	Class 1	Class 1

LWIR + LRF



Calin can do

- 1. LWIR (FLIR Sensor)
- 2. EO
- 3. Sniper rifle (GMO 、 PMO)
- 4. LRF



VDA6.3 Auditor Certification