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MetaLenX®

COMPANY PROFILE

MetaLenX is a global leader in the mass production and industrialization of metalenses. With hundreds of intellectual properties in the metalens field, strategic partnerships with domestic and overseas wafer foundries, and a self-built engineering delivery center in Huzhou, it has formed a full-process system for metalens design, manufacturing, and delivery.

Currently, the enterprise has nearly 100 employees, including several overseas PhDs and industry experts. Headquartered in Shenzhen, it has established physical offices in Huzhou and Singapore. Having completed hundreds of millions of yuan in financing, MetaLenX is advancing the large-scale commercialization of metalenses and, as a leader in the new generation of optical lens industry, is leading the transformation of the optical industry.

R&D capability

The reserve of metalens is globally leading, with 100% of the R&D personnel holding master's or doctoral degrees

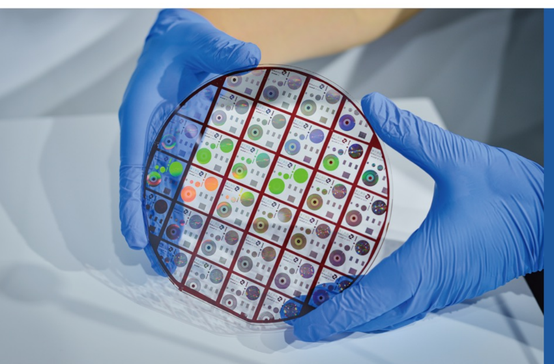
Mass production capability

Established stable strategic partnerships with world-class wafer foundries and possess independent mass production lines for metalens

Diverse product line

Multiple product lines covering consumer electronics, automotive electronics, security surveillance, industrial inspection...

ABOUT METALENS®



Metalens® is a two-dimensional planar lens with nano-structure arranged in a certain way. Metalens can control the amplitude, phase, polarization and other parameters of the incident light flexibly. It has important applications in cameras, holographic optics, AR/VR and other aspects，and has the potential to revolutionize the traditional optical industry.

REDUCE THICKNESS

Traditional lens assemblies have a thickness ranging from millimeters to decimeters, while metalens have a thickness in the range of hundreds of nanometers to micrometers.

REDUCE WEIGHT

Compared to traditional lenses, the weight of metalens is negligible.

SIMPLIFIED STRUCTURE

Compared to the complex lens assembly systems of traditional lenses, metalens can consolidate all functions onto one or two ultra-surfaces.

LOWER COSTS

Metalens are manufactured using semiconductor processes, which allows for high production capacity, and the cost of large-scale production is significantly lower than that of traditional lenses.

HIGH CONSISTENCY

Semiconductor industrial production, characterized by high consistency, high capacity, and high yield.

EXCELLENT THERMAL STABILITY

Featuring a special structure, the metalens exhibits excellent thermal stability with negligible thermal drift from -40°C to +120°C.

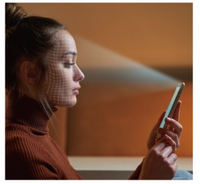
METALENX PRODUCT

Automotive Electronics

Lenses for automotive vision applications

Security Systems

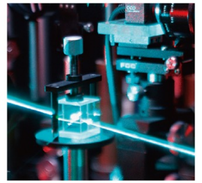
Thermometa™



Consumer Electronics

MetaToF®

MetaToF®/MetaStruclight®



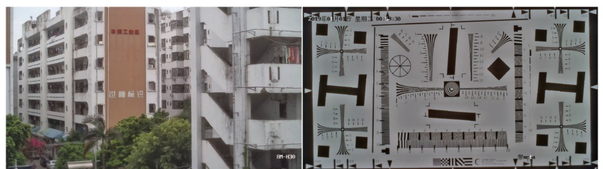
Industrial Applications

Metacollim® Collimating Lens

Uniform laser line Metalens

Customized Services

Lenses for automotive vision applications



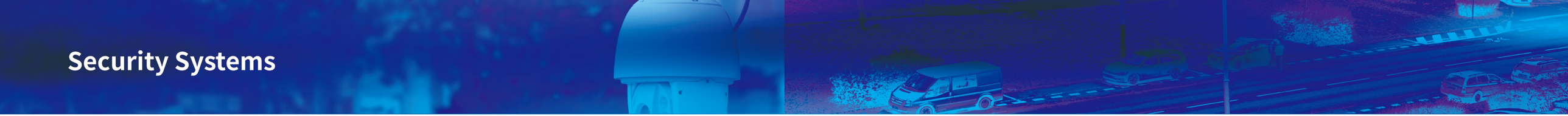
MetaLenX has released the world's first wide-spectrum ADAS-8M front-view visible light meta-optics hybrid optical system lens, which is adaptable to various application scenarios such as Lane Departure Warning (LDW), Traffic Sign Recognition (TSR), Lane Keeping Assistance (LKA), and Adaptive Cruise Control (ACC), marking a historic step in the industrialization of visible light meta-lenses and achieving a significant break-through from theory to practice. Through the independently developed full-spectrum field propagation simulation software, it achieves excellent aberration correction, stable thermal compensation, high transmittance design, and ultra-low costs, enabling the meta-hybrid system to reach market-leading standards in the high-end automotive sector. The company is currently working with multiple clients to promote the mass production of visible light automotive meta-lenses.

P#			IMA0022
Sensor	Pixel Resolution	pixels	3840x2160
	Pixel Size	um	2.1
FOV	Horizontal	°	30
	Virtical	°	17
Working Wavelength		nm	435-656
TTL		mm	29.8
EFL		mm	15.2
BFL		mm	4.6
Working Distance Range		m	5~∞
F #			1.6
Distortion			< |-1.3%|
RI			> 86.1%
Thermal Difference Elimination			-40°C~105°C

Security Systems

To address infrared thermal imaging application scenarios, MetaLenX has launched the Metascope meta-hybrid system, which replaces the function of traditional lens optics with meta-lenses. This innovation achieves imaging effects comparable to those of traditional lenses while providing advantages in size, weight, and cost. It is currently being widely used in high, mid, and low-end products.

P#			IMA5046	IMA5048	IMA5028	IMA5049
Sensor	Pixel Resolution	pixels	96×96	96×96	120×90	120×90
	Pixel Size	um	12	12	12	12
FOV	Horizontal	°	50	86	92	59
	Virtical	°	50	86	66.4	38.1
Working Wavelength		nm	8-12	8-12	8-14	8-12
TTL		mm	3.6	3.1	3.6	4.4
EFL		mm	1.3	0.8	0.9	1.6
BFL		mm	1.6	1.2	1.3	2
Working Distance Range		m	0.2~∞	0.2~∞	0.2~∞	0.2~∞
F #			0.94	0.95	1.04	0.95
Distortion			< |-15.6%|	< |-66%|	< |-47%|	< |-12%|
RI			> 89%	> 81%	> 73%	> 94%
Thermal Difference Elimination			-40°C~80°C	-40°C~80°C	-40°C~80°C	-40°C~80°C



Security Systems

Thermometa™

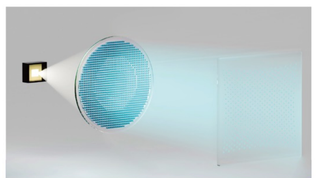
P#			IMA5012	IMA5039	IMA5059	IMA5053	IMA5044	IMA5080	IMA5081
Sensor	Pixel Resolution	pixels	256×192	256×192	256×192	256×192	256×192	256×192	256×192
	Pixel Size	um	12	12	12	12	12	12	12
FOV	Horizontal	°	90.4	49.2	30.3	24.8	17.5	9.2	7
	Virtical	°	65.6	36.4	22.6	18.7	13.2	6.9	5.3
Working Wavelength		nm	8-14	8-14	8-12	8-12	8-14	8-12	8-12
TTL		mm	6.7	13.9	14.7	11.4	16	23.8	31.5
EFL		mm	2.1	3.6	5.8	7	10	19	24.9
BFL		mm	3	4.8	8.1	4.3	4.2	8.6	7.9
Working Distance Range		m	0.2~∞	0.2~∞	1.5~∞	0.2~∞	0.2~∞	5.5~50	0.5~∞
F #			1	1	1.1	0.95	0.9	0.95	1
Distortion			< |-44.4%|	< |-12%|	< |-4.5%|	< |-0.83%|	< |-0.91%|	< |-0.45%|	< |+0.15%|
RI			> 76%	> 93.3%	> 90%	> 90%	> 92%	> 97%	> 97%
Thermal Difference Elimination			-40°C~80°C	-40°C~80°C	—	-40°C~80°C	-40°C~80°C	—	—

Thermometa™

P#			IMA5064	IMA5078	IMA5079	IMA5070	IMA5050	IMA5011	IMA5072
Sensor	Pixel Resolution	pixels	384×288	640×512	640×512	640×512	640×512	640×512	640×512
	Pixel Size	um	12	12	12	12	12	12	12
FOV	Horizontal	°	10.6	95	63.6	33.7	22.9	17.5	12.6
	Virtical	°	8	76.8	51.9	26.9	18.4	14	10.1
Working Wavelength		nm	8-12	8-12	8-12	8-12	8-12	8-14	8-12
TTL		mm	31.3	25	25	22.4	28.9	30.4	44.2
EFL		mm	24.7	4.3	6.5	12.9	18.9	25	34.6
BFL		mm	11.7	6.5	6.7	9.9	11.1	6	8.9
Working Distance Range		m	0.4~∞	0.2~∞	5~∞	0.4~∞	0.5~∞	0.2~∞	0.2~10
F #			1.15	1	1	1.2	0.95	1	0.9
Distortion			< |+1%|	< |-35.9%|	< |-8.19%|	< |-5.8%|	< |-1.5%|	< |0.48%|	< |+0.9%|
RI			> 97%	> 65%	> 68.5%	> 95%	> 90%	> 94%	> 92.8%
Thermal Difference Elimination			-40°C~80°C	-40°C~80°C	—	-40°C~80°C	-40°C~80°C	-40°C~80°C	—

Consumer Electronics

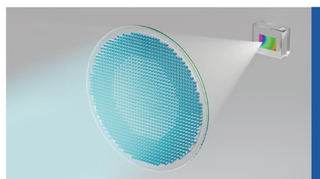
MetaToF®



As the receiver end of the MetaToF® series products launched under the Metalens brand, the MetaToFRx® replaces traditional 3D sensing receiver lens assemblies. While ensuring optical performance, it simplifies the module and can be customized in design and manufacturing according to customer requirements.

P#			IMA0010	IMA0020	IMA0030
Sensor	Pixel Resolution	pixels	80×64	8×8	40×30
	Pixel Size	um	16.8	50	20
FOV	Horizontal	°	55	45	65.2
	Virtical	°	43.5	45	47.6
Working Wavelength		nm	850±10	940±10	940±10
TTL		mm	2.9	1.1	1.4
EFL		mm	1.4	0.6	0.7
BFL		mm	0.9	0.6	0.5
Working Distance Range		m	0.1~∞	0.2~∞	0.2~∞
F#			1	1	1.18
Distortion			< |16%|	< |18%|	< |-26%|
RI			>60%	>70%	> 97%

MetaToF®/ MetaStruclight®



As the transmitter end of the MetaToF® series products launched under the Metalens® brand, the MetaToFTx® replaces traditional multi-element collimating lens assemblies and diffractive optical elements. With the far-field structured light meta-lens product MetaStruclight®, it redefines structured light modules, offering significant advantages in size and cost. It has immense application value in scenarios such as consumer electronics, AIoT, facial recognition, and facial payment.

P#		STR0004	STR0008	STR0011	STR0015	STR0017	STR0019
Working Wavelength	nm	940	940	940	940	940	940
FOV	°	46.0×63.9	78.4×71.4	64x55.3	71x81	110.6x19.7	85.4x65.2
Copy		3×3	5×13	63	85	5×3	3x1
TTL	mm	2.755	3.425	5.245	3.725	2.86	1.03
BFL	mm	2.03	2.7	4.52	3.0	2.12	0.729
Diffraction Efficiency	%	64.8	64.2	70.0	70.0	68.2	70
Product thickness	mm	0.725	0.725	0.725	0.725	0.725	0.3
Valid area size	mm	3*3	2.7*2.7	3.96*3.28	3*3	2.8*3.4	2.2*2.65
VCSEL effective size	um	690*483	633×264	804x524	/	684×835	327×797

Industrial Applications

Metacollim®

As part of the Metalens brand, the Metacollim series of meta-lens products transforms light sources such as VCSELs and LDs into a collimated beam. This series can replace traditional cylindrical lenses, spherical lenses, aspherical plano-convex lenses, and freeform mirrors in various collimation applications, thereby reducing system costs and size.

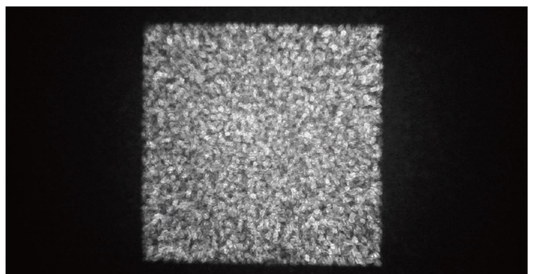
P#		SHA0012	SHA0055
Working Wavelength	nm	810	940
Divergence angle after collimation	°	5.5	5
TTL	mm	1.035	1.866
BFL	mm	0.31	1.566
Diffraction Efficiency	%	65	/
Transmittance	%	90	90
Product thickness	mm	0.725	0.3
Valid area size	mm	1.89*1.62	ϕ1.24
Metalens size	mm	3*3	1.64*1.64
VCSEL effective size	um	1170*955	82x133

Uniform laser line Metalens

The function of the linear meta-lens is to transform different light sources into a beam that has uniform power density, high straightness, good stability, and outputs in a linear form. This product can simplify the linear laser module and reduce its size and cost. It can be widely applied in scenarios such as 3D scanning and measurement, equipment inspection, atmospheric measurement, industrial calibration, and robot obstacle avoidance."

P#			SHA0022	SHA0051
Working Wavelength		nm	855	850
FOV	Horizontal	°	60	124
	Virtical	mm	0.770mm@500mm	2.30mm@300mm
TTL		mm	2.615	2.725
BFL		%	1.89	2
Diffraction Efficiency		%	70.7	60
Transmittance		%	81	81
Peak Valley			/	1.51:1
Product thickness		mm	0.725	0.725
Metalens size		mm	3.0*3.0	2.4*3.0

Metalens Diffuser



Metalens diffuser

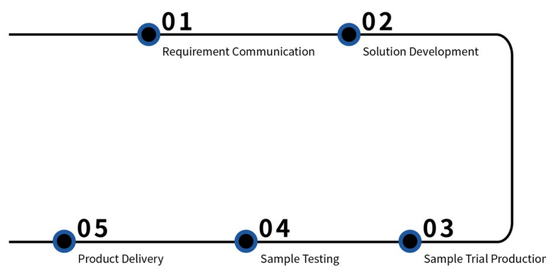
The metalens diffuser transforms incident light into uniform spots of different shapes and can customize the shape, scale, and intensity distribution of the spots according to customer requirements. Compared to traditional beam homogenizers, the metalens diffuser is heat-resistant, highly reliable, and does not suffer from yellowing issues. It can be widely applied in fields such as 3D sensing, laser projection, laser processing, and laser aesthetics.

P#			SHA0036	SHA0038	SHA0053
Working Wavelength		nm	940	850	940
FOV	H	°	72	36	48
	V	°	58	52	48
TTL		mm	0.985	1.125	0.65
BFL		mm	0.26	0.4	0.35
Transmittance		%	82	85	85
Peak Valley		%	1: 0.65	1:.1	/
Product thickness		mm	0.725	0.725	0.3
Metalens size		mm	2.6*2.9	2.62*2.84	2.0*1.42

Customized Services

MetaLenX provides professional customization services for meta-lenses. When customers present customization requests, MetaLenX offers expert customization advice and quickly conducts assessments. After the project is initiated, the project team maintains timely communication and follow-up to ensure smooth completion and address your product needs. Contact MetaLenX to create your next custom order and discover what makes us stand out.

Customization Process



MASS PRODUCTION CAPACITY

Established partnerships with world-class wafer foundries

The company has comprehensive semiconductor processing capabilities and has established long-term strategic partnerships with several leading wafer foundries, ensuring high production consistency and stable capacity guarantees.

Possesses an independent mass production line

01

Micro-nano structure inspection

- Structural diameter
- Structural height

02

Appearance inspection

- Surface scratch
- Particle
- Chipping

03

Physical dimensions

- Edge length
- Concentricity

04

Optical inspection

- MTF
- FOV
- HR testing equipment