



NAOTECH

Professional Optical Lens Company



COMPANY PROFILE

Company	Naotech Co., Ltd.
Date of Establishment	September 2003
CEO	Kim Young-ki
Head office	4F, Naotech Bld., Deokcheon-ro 72-beon gil, Manan-gu, Anyang, Gyeonggi-do, Korea
Factory	264-329 POZIZHOUIA VILLAGE GANGXI TOWN RONGCHENG CITY SHANDONG PROVINCE CHINA
Producing ability	Based on single lens processing, over 1 million pcs / month
Production facilities	1) Curve Generating m/c : 12 unit 2) Polishing m/c : 60 unit 3) Recess Polishing m/c : 15 unit 4) Centering m/c : 29 unit

COMPANY PROFILE

Since September 2003, Naotech is a professional optical company having realized the remarkable service for customer's satisfaction and the best quality for wide supply of optical products used for diverse cameras. Based on 20 years know-how, Naotech has provided optical parts from micro lens to vehicle camera lenses which high technology and quality are required. Not only in domestic market, Naotech but also exports such best quality lenses to world-wide companies in Japan, Taiwan, Belgium, Germany, China, France and so on. We promise you to make an effort for developing domestic optical industry and be a leading company in the world by quality products through continuous research and development.



COMPANY HISTORY

2003

Company established

2004

Provision contract with Creative Technology

2007

Provision contract with AV Tech

2008

OEM for Commax& AXIS

2011

Developed Fish Eye Lens(1/4" _190°)
Low Distortion Lens(TV Dist' _<3%)

Developed 1.3MP lens for 1/2.7" sensor
Became a partner SCOMMTECH

(Samsung SDS) (Drone, IP Camera)

2012

Provision contract with SEM & LG Innotek, and Hyundai
Developed 2MP lens (EFL 2.6mm, FOV=157.4°)

2013

Developed 3MP lens (EFL 4.3mm, FOV=92.6°)
Developed ToF Lens (2 types)
(H=70°_NL393D / H=90°_NL333D for 1/3" format)

2014

Supplied to I-Navi(Thinkware) &DABONDA

2016

Wide angle lens to HYUNDAI HEAVY INDUSTRY

2017~2018

Developed ToFWide Angle lens
(H=112°_NL283D for 1/3" Format)

Supplied wide angle lens to Japan Market

2019

ToF lens developed for 1/2" ToF sensor
(NL3605GMF, H=110°, Mounted on the Melexis development kit)

- Expanded lineup by sensor size / angle of view
- Utilization of aspherical technology
- ▶ Miniaturization of lens

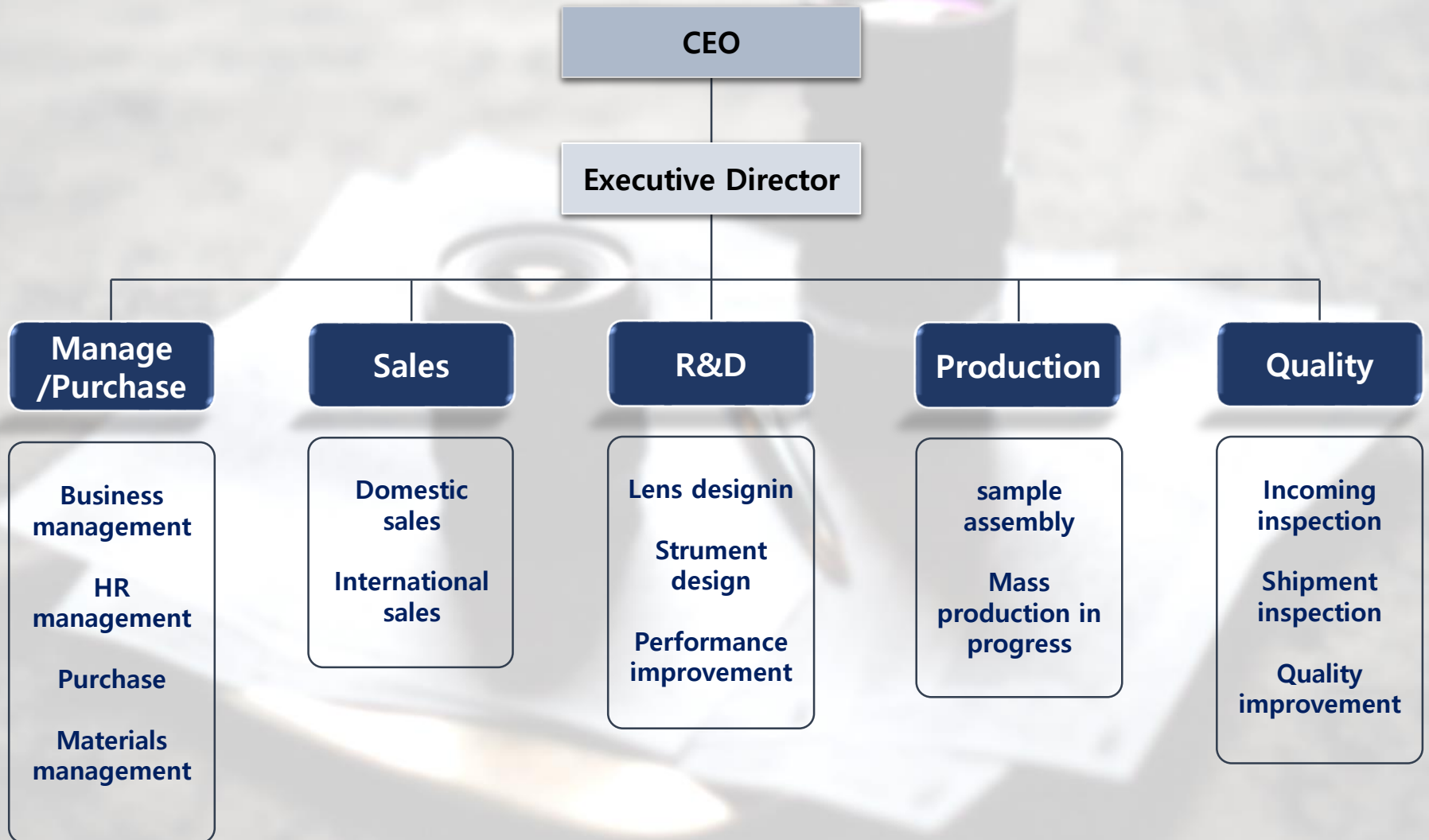
Developed a lens for Vehicle
ADAS / Mirrorless Camera
(F#1.6, H=50°)

2020~2024

1/2" ToF sensor , various types of lenses (H=25~150°)
1/4" & 1/4.5" ToF sensor , various types of lenses
(H=75~140°)

- ▶ Completed the construction of ToF lineup tailored to various customer needs







Through own factory in China Competitive price and stable quality control

▶ In the case of most other companies, the joint format of the local company



A prerequisite for an ultra-wide-angle lens
Securing ultra-small curvature (R) and ultra-small (\emptyset) processing technology

▶ Curvature: Min. 2R (concave) / Outer diameter: Min. 2.5 \emptyset

CORE COMPETENCE



Internalization of all ASS'Y
processes *Only in Korea



Technology development environment

We are registered as an official partner in the optical (lens) part of Melexis, one of the major ToF sensor companies, and through this, we have a development environment in which development is carried out using information that is one step ahead of the ToF



Home > Tech info > Recommended third parties > Time-of-flight ecosystem > Optics > Naotech

Naotech

Lenses for 3D Time-of-Flight Image

- Almost 10 years experience with ToF lenses
- Rich know-how for optical parts for more than 30 years



Features

- Optimized for Melexis 3D ToF image sensors: MLX75026 and MLX75027
- QVGA to VGA resolution
- Aspherical glass parts adopted. ⇒ Minimizing aberration, Strong for high temperatures
- Different viewing angles (DFoV) 30°...150°

Contact

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Website: www.naotech.co.kr/eng/

Patents related to ToF LENS

Maximizes sensing ability by distance, which is a key aspect of ToF lenses.

IR filter optimized for near-infrared rays applied

(Patent Registration No. 10-1988602, No. 10-2112862, No. 10-2324807)



특허증
CERTIFICATE OF PATENT

특허 제 10-1988602 호
Patent Number

출원번호 제 10-2017-0117638 호
Application Number

출원일 2017년 09월 14일
Filing Date

등록일 2019년 06월 05일
Registration Date

발명의 명칭 Title of the Invention
TOF용 렌즈조립체

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위의 발명은 「특허법」에 따라 특허등록원부에 등록되었음을 증명합니다.
This is to certify that, in accordance with the Patent Act, a patent for the invention has been registered at the Korean Intellectual Property Office.

2019년 06월 05일

특허청장
COMMISSIONER,
KOREAN INTELLECTUAL PROPERTY OFFICE

박원주

QR코드로 현재기준 등록사항을 확인하세요



특허증
CERTIFICATE OF PATENT

특허 제 10-2112862 호
Patent Number

출원번호 제 10-2019-0044468 호
Application Number

출원일 2019년 04월 16일
Filing Date

등록일 2020년 05월 13일
Registration Date

발명의 명칭 Title of the Invention
고해상력 광각 렌즈 어셈블리

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2020년 05월 13일

특허청장
COMMISSIONER,
KOREAN INTELLECTUAL PROPERTY OFFICE

박원주

QR코드로 현재기준 등록사항을 확인하세요



특허증
CERTIFICATE OF PATENT

특허 제 10-2324807 호
Patent Number

출원번호 제 10-2020-0096392 호
Application Number

출원일 2020년 07월 31일
Filing Date

등록일 2021년 11월 04일
Registration Date

발명의 명칭 Title of the Invention
3D 센서용 ToF 렌즈 어셈블리

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2021년 11월 04일

특허청장
COMMISSIONER,
KOREAN INTELLECTUAL PROPERTY OFFICE

김응래

QR코드로 현재기준 등록사항을 확인하세요

WHERE TO USE?



Development Road Map				
Application		2024	2025	2026
For Gesture Recognition (ToF Lens)		1/2" VGA < H10 ~ H30 > 1/4" VGA < H130 ~ H150 > 1/4.5" Fisheye Lens < H180 >	FHD_ Fisheye Lens < H180 ↑ > 1/2" , 1/4" FHD < H80 ~H150 >	UHD_ Series Lens
For Vehicles	Dash Cam	1/2.7" FHD < H120 ~ H130 >		1/1.7" UHD < H110 ↑ >
	DMS E-mirror	1/2" _ EFL 4~6mm		1/1.7" UHD_ EFL 4~6mm
	AVM		QHD_ Fisheye Lens < H200 ↑ >	
For Security & Industrial		QHD_ EFL 8mm QHD_ EFL 25mm		1/1.7" QHD_ EFL 12~16mm

NL3275GMF (850nm/940nm)



Focal Length	3.27mm
F#	1.2
Structure	2GM3G+BPF
Max Image Circle	Ø8.20
Based on	1/2"
D	165.8°
H	120.3°
V	86.6°
TTL	19.18mm
Dimension	Ø16X17.47mm

NL3605GMF (850nm/940nm)



Focal Length	3.60mm
F#	1.2
Structure	2GM3G+BPF
Max Image Circle	Ø8.40
Based on	1/2"
D	150.9°
H	109.4°
V	78.7°
TTL	19.76mm
Dimension	Ø15X18.46mm

NL4224GMF (850nm/940nm)



Focal Length	4.22mm
F#	1.2
Structure	1GM3G+BPF
Max Image Circle	Ø8.40
Based on	1/2"
D	117.0°
H	90.3°
V	66.3°
TTL	22.77mm
Dimension	Ø15X17.76mm

NL4604GMF (850nm/940nm)



Focal Length	4.60mm
F#	1.2
Structure	1GM3G+BPF
Max Image Circle	Ø8.40
Based on	1/2"
D	103.1°
H	81.1°
V	60.2°
TTL	23.10mm
Dimension	Ø15X18.86mm

NL5304GMF (850nm/940nm)



Focal Length	5.30mm
F#	1.2
Structure	1GM3G+BPF
Max Image Circle	Ø8.40
Based on	1/2"
D	87.1°
H	69.3°
V	51.9°
TTL	23.53mm
Dimension	Ø15X21.43mm

NL7354GMF (850nm/940nm)



Focal Length	7.35mm
F#	1.2
Structure	1GM3G+BPF
Max Image Circle	Ø8.40
Based on	1/2"
D	60.8°
H	49.1°
V	37.0°
TTL	22.39mm
Dimension	Ø15X19.30mm

NL144GMF (850nm/940nm)



Focal Length	1.46mm
F#	1.0
Structure	1GM3G+BPF
Max Image Circle	Ø3.20
Based on	1/4.5"
D	140.5°
H	140.5° (*Fisheye type)
V	99.2°
TTL	12.68mm
Dimension	Ø14X11.36mm

NL1774GMF (850nm/940nm)



Focal Length	1.77mm
F#	1.2
Structure	1GM3G+BPF
Max Image Circle	Ø4.40
Based on	1/4.5"
D	144.8°
H	110.0°
V	80.0°
TTL	13.02mm
Dimension	Ø14X11.25mm

NL194GMF (850nm/940nm)



Focal Length	1.91mm
F#	1.3
Structure	1GM3G+BPF
Max Image Circle	Ø4.70
Based on	1/4"
D	143.8°
H	111.6°
V	82.0°
TTL	15.02mm
Dimension	Ø15X12.98mm

NL305GMF (850nm/940nm)



Focal Length	2.93mm
F#	1.3
Structure	1GM4G+BPF
Max Image Circle	Ø4.40
Based on	1/4"
D	93.1°
H	73.2°
V	53.6°
TTL	13.50mm
Dimension	Ø14X11.25mm

NL283DNF (850nm/940nm)



Focal Length	2.79mm
F#	1.2
Structure	1G2P+BPF
Max Image Circle	Ø6.20
Based on	1/3"
D	164.6°
H	111.9°
V	78.6°
TTL	24.63mm
Dimension	Ø25X22.92mm

NL333DF (850nm/940nm)



Focal Length	3.34mm
F#	1.1
Structure	1G2P+BPF
Max Image Circle	Ø6.20
Based on	1/3"
D	116.8°
H	88.5°
V	64.1°
TTL	30.50mm
Dimension	Ø22.5X28.28mm

NL393DF (850nm/940nm)



Focal Length	3.90mm
F#	1.1
Structure	1G2P+BPF
Max Image Circle	Ø6.20
Based on	1/3"
D	94.3°
H	73.3°
V	53.9°
TTL	30.92mm
Dimension	Ø22.5X28.92mm

NL493DF (850nm/940nm)



Focal Length	4.90mm
F#	1.1
Structure	1G2P+BPF
Max Image Circle	Ø6.20
Based on	1/3"
D	73.3°
H	57.0°
V	42.0°
TTL	28.18mm
Dimension	Ø22.5X26.46mm

PRODUCT LIST **ToF Lens (New Product)**

RD235GMF (850nm/940nm)



Focal Length	2.30mm
F#	1.3
Structure	1GM3G+BPF
Max Image Circle	Ø5.00
Based on	1/4"
D	121.6°
H	93.3°
V	68.3°
TTL	13.13mm
Dimension	Ø14X10.79mm

RD255GMF (850nm/940nm)



Focal Length	2.50mm
F#	1.3
Structure	1GM3G+BPF
Max Image Circle	Ø5.00
Based on	1/4"
D	109.4°
H	84.9°
V	62.5°
TTL	13.38mm
Dimension	Ø14X10.68mm

RD285GMF (850nm/940nm)



Focal Length	2.80mm
F#	1.3
Structure	1G3G+BPF
Max Image Circle	Ø5.00
Based on	1/4"
D	96.0°
H	75.1°
V	55.6°
TTL	13.88mm
Dimension	Ø14X10.30mm

RD256GMF (850nm/940nm)



Focal Length	2.55mm
F#	1.3
Structure	1GM5G+BPF
Max Image Circle	Ø7.50
Based on	1/2"
D	178.2°
H	148.9°
V	109.8°
TTL	22.02mm
Dimension	Ø21.0X17.21mm

RD286GMF(850nm/940nm)



Focal Length	2.85mm
F#	1.3
Structure	1GM5G+BPF
Max Image Circle	Ø8.40
Based on	1/2"
D	170.4°
H	133.3°
V	98.4°
TTL	23.64mm
Dimension	Ø21.0X18.14mm

RD1404GMF(850nm/940nm)



Focal Length	14.00mm
F#	1.4
Structure	1GM3G+BPF
Max Image Circle	Ø8.40
Based on	1/2"
D	30.8°
H	25.2°
V	19.3°
TTL	17.29mm
Dimension	Ø14.0X14.23mm

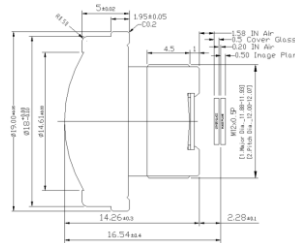
PRODUCT LIST ToF Lens (New Product)

CM6304GMF (850nm/940nm)



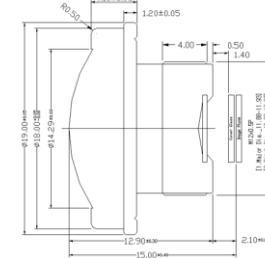
Focal Length	6.30mm
F#	1.2
Structure	1GM3G+BPF
Max Image Circle	Ø8.40
Based on	1/2"
D	71.8°
H	57.7°
V	43.4°
TTL	23.41mm
Dimension	Ø14X19.47mm

CM165GMF (850nm/940nm)



Focal Length	1.60mm
F#	1.2
Structure	1GM4G+BPF
Max Image Circle	Ø4.40
Based on	1/4.5"
D	155.2°
H	120.3°
V	88.3°
TTL	16.54mm
Dimension	Ø19X14.26mm

CM155GMF (850nm/940nm)



Focal Length	1.55mm
F#	1.2
Structure	2GM3G+BPF
Max Image Circle	Ø4.80
Based on	1/4"
D	168.0°
H	134.0°
V	100.2°
TTL	15.00mm
Dimension	Ø19X12.90mm

NL3335SF

For Dash cam



Focal Length	3.33mm
F#	2.3
Structure	5G+IRF
Max Image Circle	Ø6.90
Based on	1/2.7"
D	139.1°
H	111.9°
V	57.4°
TTL	17.48mm
Dimension	Ø15X12.82mm

NL3665NF15

For Dash cam



Focal Length	3.66mm
F#	2.3
Structure	5G+IRF
Max Image Circle	Ø7.20
Based on	1/2.7"
D	116.6°
H	97.7°
V	51.8°
TTL	19.68mm
Dimension	Ø15X14.08mm

ML6125SF

For DMS



Focal Length	6.00mm
F#	2.0
Structure	5G+IRF
Max Image Circle	Ø7.00
Based on	1/2.7"
D	66.0°
H	56.0°
V	31.0°
TTL	23.40mm
Dimension	Ø14X17.40mm

NL435QF

For DMS



Focal Length	4.31mm
F#	2.1
Structure	5G+IRF
Max Image Circle	Ø6.61
Based on	1/2.9"
D	85.0°
H	73.4°
V	40.6°
TTL	19.84mm
Dimension	Ø14X13.41mm

NL465SF

For DMS



Focal Length	4.68mm
F#	2.2
Structure	5G+IRF
Max Image Circle	Ø6.90
Based on	1/2.9"
D	76.7°
H	66.6°
V	37.2°
TTL	21.10mm
Dimension	Ø14X14.65mm

NL234NF

For AVM



Focal Length	2.32mm
F#	2.3
Structure	4G+IRF
Max Image Circle	Ø5.70
Based on	1/3.2"
D	170.7°
H	123.7°
V	87.9°
TTL	17.38mm
Dimension	Ø14X14.70mm

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