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MCNEX TOWER, 13-39, SONGDOGWAHAK-RO 18BEON-GIL, YEONSU-GU, INCHEON, REPUBLIC OF KOREA



MULTIMEDIA CORE OF THE NEXT. MCNEX  
RELIABLE CORE TECHNOLOGY  
AND SOLUTIONS



AUTOMOTIVE SOLUTION

THE EYE OF IT WORLD, MCNEX

MCNEX'S 9 CONSECUTIVE YEARS OF CES EXHIBITION SINCE CES2016 **CES 2023**  

MULTIMEDIA CORE OF THE NEXT MCNEX

# MCNEX TOWER

INCHEON, SOUTH KOREA  
HEADQUARTER

BE THE GLOBAL NO.1 IMAGE SOLUTION LEADING COMPANY ON  
A BASIS OF CONTINUOUS RESEARCH AND DEVELOPMENT



## RELIABLE CORE TECHNOLOGY AND SOLUTIONS



<b>COMPANY NAME</b>	MCNEX Co., Ltd.	<b>REVENUE</b>	USD1.0B in 2022
<b>HEADQUARTER</b>	Incheon, South Korea	<b>IPO</b>	Listed on Korean exchange market (KOSPI) in 2021
<b>MAIN FACTORY</b>	Ninh Binh, Vietnam	<b>CERTIFIED IATF 16949 IN 2018</b>	
<b>ESTABLISHED</b>	Dec. 2004		

### AUTOMOTIVE SOLUTION

Multi interface camera module	Shark Antenna camera system	Dual scanning camera
AHD, LVDS(GMSL, FPD-link), Ethernet, etc.	In-cabin camera system: DMS, OMS	High resolution camera: 7.4MP, 8MP
ADAS & Autonomous driving camera applications	FRU (Face Recognition unit) system	Fingerprint sensing system
SVM, MFC, Tri-focal camera system, Dual camera, etc.	DVRS system: FHD, QHD	ToF camera

### MOBILE SOLUTION

<b>SMART PHONE CAMERA MODULE</b>	<b>ACTUATOR</b>	<b>BIOMETRIC MODULE</b>
Single, Dual, Triple, Quadruple camera	VCM, Encoder, OIS	Iris, Face recognition camera
OIS, Folded zoom, ToF camera	Folded zoom	Fingerprint & Body temp. Sensing module. Skin sensor module

### SYSTEM SOLUTION

Dashcam, Golf range finder, Network Camera, Medical camera, AR/VR/MR camera, USB camera

### EMS (ELECTRONICS MANUFACTURING SERVICE)

Manufacturing service for all kinds of electronics items

### MAIN CUSTOMER


MULTIMEDIA CORE OF THE NEXT. MCNEX

# GLOBAL NETWORK

Contribute to human culture development by leading the IT industry.  
We lead the changes for the future of the prosperous world

MULTIMEDIA CORE OF THE NEXT. MCNEX

MCNEX IS EXPANDING ITS **GLOBAL NETWORK**  
ALL OVER THE WORLD



**SOUTH KOREA. HEADQUARTER. MCNEX TOWER**



**NINH BINH. VIETNAM FACTORY I,II, III, IV**

**SOUTH KOREA . HEADQUARTER**

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● R&D ● Manufacturing ● Sales ● FAE(Field Application Engineer)

BUSINESS AREA

# AUTOMOTIVE SOLUTION

## ADVANCED DRIVER ASSISTANCE SYSTEM BY MCNEX

MCNEX ADAS is developing a various sensing technology which enhance safety and convenience to both driver and pedestrians



- TRI-FOCAL CAMERA SYSTEM
- IN-CABIN CAMERA SYSTEM
- BMP DUAL SCANNING CAMERA
- DVRS CAMERA
- FRU (FACE RECOGNITION UNIT)
- FINGERPRINT SENSING SYSTEM
- HIGH RESOLUTION CAMERA / 7.4M, 8M
- MULTI INTERFACE CAMERA
- SHARK ANTENNA CAMERA

### MCNEX OWNED TECHNOLOGY FOR AUTONOMOUS DRIVING

As creative pioneer, leading innovation and technology by continuous research & development create safe and convenient world that everyone dreams of



## AUTOMOTIVE SOLUTION TRI-FOCAL CAMERA SYSTEM

Trifocal camera providing 120/30/60-degree of multi-range to cover wide & tele range of forward direction.

Support a pedestrian & vehicle detect, traffic signal recognition.

Calculate various sensing data such as coordinates, speed, confidence-score, label etc.

Integrated Control signal



CATEGORY	ITEM	SPECIFICATION
CAMERA / ECU	Resolution	1920 * 1080
	Image Sensor	CMOS FHD SENSOR
	Frame Rate	60fps
	View Angle	H:30° / 60° / 120°
	Output Format	LVDS (PoC)
	Power	DC12V (±2.0V)
	Image Format	RAW Data
Operating Temp.	-40 ~ +105°C	



## AUTOMOTIVE SOLUTION IN-CABIN CAMERA SYSTEM

Detect a hand gesture by using stereo cameras.

Detect a hand gesture in a low light by IR.

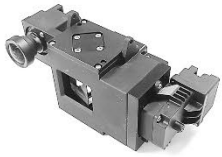
Control all function keys in AVN by hand gesture.

Driver Monitoring System

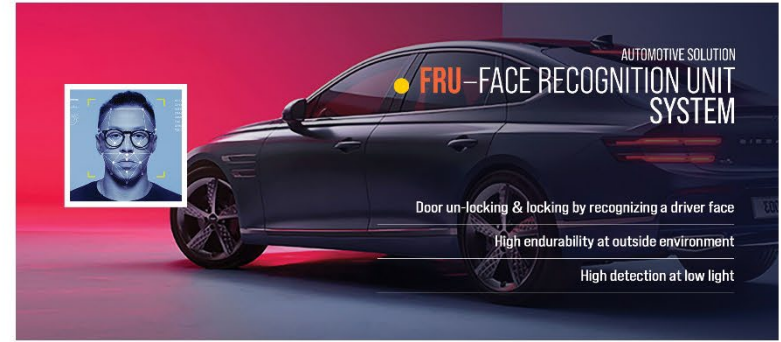
Occupant Monitoring System



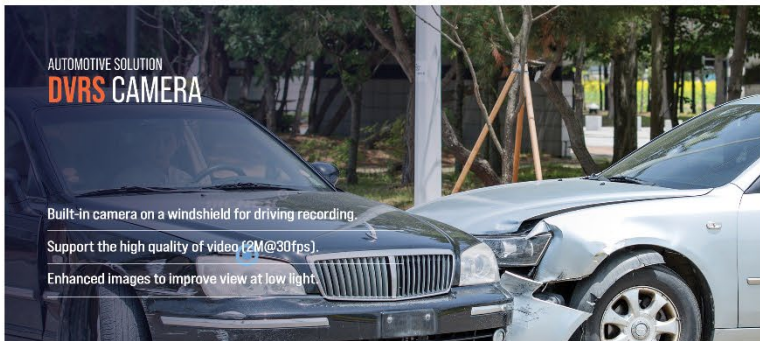
CATEGORY	ITEM	SPECIFICATION
CAMERA / ECU	Input Voltage	DC 7V ~ DC 24V
	Fov(H)	82°
	Resolution	1280*720p@60fps
	IR	940nm LED
	Video Output	LVDS(PoC)
	Data Output	CAN
SENSING		Disparity Map



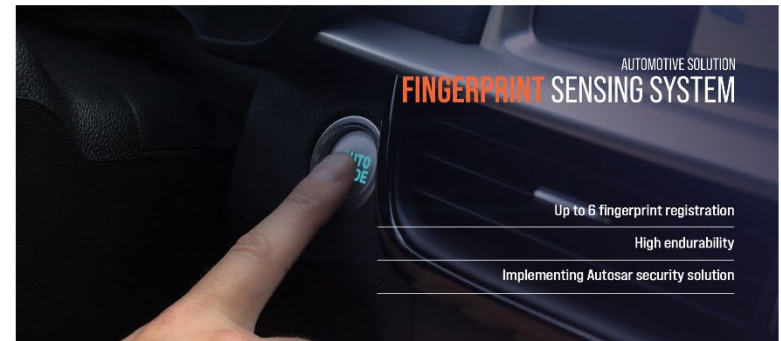
CATEGORY	ITEM	SPECIFICATION
CAMERA / ECU	Input Voltage	DC9V ~ DC25V
	Fov(H)	Wide: 120° Tele: 15°
	Pixel Resolution	8M pixel
	Video Output	LVDS(PoC)
	Data Output	CAN
SENSING	-	-
	PD, VD, TLR, TSR	-



CATEGORY	ITEM	SPECIFICATION
CAMERA / SYSTEM	Resolution	1280(H) X 800(V), 1Mp
	Image Sensor	1/4" CMOS Mono
	Frame Rate	30fps
	View Angle	H 85°±3°, V 53°±3°
	Output Format	LVDS(POC)
	Power	DC 8V(±0.5V)
	AP	CPU Arm Cortex



CATEGORY	ITEM	SPECIFICATION
CAMERA	Camera	FHD CMOS
	Sensor Format	1/2.8 inch
	Resolution	1920*1080@30fps
	Pixel Size	2.9um * 2.9um
	Fov(H)	95°
	LENS F-Number	F2.0
	Video output	LVDS, YUV422 1280*1080@30fps
	View mode	Front view



CATEGORY	ITEM	SPECIFICATION
FINGERPRINT SENSING SYSTEM	MCU	32bit RISC CPU
	Max Register no.	6 ↑
	Interface	SPI
	OS	AUTOSAR
	Communication	CAN, SPI
	FRR/FAR	FRR 1%, FAR 1/100,000 ↓
	Operating temp	-40~85℃
	-	-

AUTOMOTIVE SOLUTION  
**HIGH RESOLUTION CAMERA**  
 7.4M, 8M

Application: Front camera

Minimize thermal focal shift

Protect a camera from harsh environment, such as humidity, water and snow

CATEGORY	ITEM	SPECIFICATION
CAMERA / ECU	Input Voltage	DC9V ~ DC25V
	Fov(H)	120°
	Pixel Resolution	7.4/8M pixel
	Video Output	LVDS (POC)
	Data Output	CAN
SENSING	PD, VD, TLR, TSR	-
	-	-
	-	-

AUTOMOTIVE SOLUTION  
**SHARK ANTENNA CAMERA**

Embedded camera in a shark antenna for replacing a room mirror & back-up camera

CATEGORY	ITEM	SPECIFICATION
CAMERA	Resolution	1280(H) X 800(V), 1Mp
	Image Sensor	¼" CMOS Mono
	Frame Rate	30fps
	View Angle	H 85°±3°, V 53°±3°
	Output Format	LVDS(POC)
	Power	DC 8V(±0.5V)
	-	-

AUTOMOTIVE SOLUTION  
**MULTI INTERFACE CAMERA**

AHD / LVDS / Ethernet camera

Low cost and high video quality

Compatibility with existing networks.

Application: Surround View and Back-up camera

CATEGORY	ITEM	SPECIFICATION
LVDS CAMERA	Fov	192°(H), 120°(V)
	Pixel Resolution	1280 x 724p@30fps
	Video Output	LVDS (POC)
ETHERNET CAMERA	Approach	SVM, RVM
	Fov	192°(H), 137°(V)
	Pixel Resolution	1280 x 944p@30fps
AHD CAMERA	Video Output	Ethernet
	Approach	SVM, RVM
	Fov	192°(H)
AHD CAMERA	Pixel Resolution	1280 x 724p@30fps
	Video Output	AHD
	Approach	RVM

35 vehicle model	18 vehicle model	5 vehicle model	4 vehicle model	3 vehicle model	2 vehicle model

**TOTAL 820 CAMERA MODELS**    **ANNUAL SHIPPING 5.0 MIL MODULES**  
 820 model camera moduleS development (supplying for all premium vehicles in Hyundai, KIA)



BUSINESS AREA

# TOTAL MOBILE SOLUTION

## VARIOUS CAMERA MODUL

5M FF ~ 108M AF  
WITH STABLE YEILD

HIGH PERFORMANCE | MICROMINIATURIZATION | SLIM | AF APPLIED



## SMART PHONE CAMERA MODULE

SINGLE, DUAL, TRIPLE, QUADRUPLE CAMERA  
DIS, FOLDED ZOOM, TOF CAMERA

## ACTUATOR

VCM, ENCODER, DIS, FOLDED ZOOM

## BIOMETRIC MODULE

IRIS, FACE RECOGNITION CAMERA  
FINGERPRINT SENSING MODULE

## LEADING MOBILE CAMERA & SECURITY SOLUTION PROVIDER

Make a dream come true on a basis of change and innovation



TOTAL MOBILE SOLUTION

# SMART PHONE CAMERA MODULE

SINGLE, DUAL, TRIPLE, QUADRUPLE CAMERA  
DIS, FOLDED ZOOM, TOF CAMERA

## CAMERA MODULE LINE-UP\_FIXED FOCUS MODEL

5M FF	5M FF	5M FF	5M FF
			
F.NO_2.0 / FOV_68°	F.NO_2.4 / FOV_78°	F.NO_2.4 / FOV_85°	F.NO_2.2 / FOV_123°
8M FF	12M FF	12M FF	13M FF
			
F.NO_2.2 / FOV_80°	F.NO_2.2 / FOV_120°	F.NO_2.2 / FOV_123°	F.NO_2.0 / 78°
16M FF	16M FF	24M FF	
			
F.NO_1.9 / FOV_76°	F.NO_2.0 / FOV_79°	F.NO_1.9 / FOV_76°	

TOTAL MOBILE SOLUTION

# SMART PHONE CAMERA MODULE

SINGLE, DUAL, TRIPLE, QUADRUPLE CAMERA  
OIS, FOLDED ZOOM, TOF CAMERA



## CAMERA MODULE LINE-UP\_AUTO FOCUS MODEL

10M AF	10M AF	10M AF	13M AF
F.NO_2.2 / FOV_85°	F.NO_2.2 / FOV_80°	F.NO_2.4 / FOV_80°	F.NO_1.7 / FOV_75°
13M AF	13M AF	40M AF	48M AF
F.NO_2.0 / FOV_76°	F.NO_1.9 / FOV_77°	F.NO_2.2 / FOV_80°	F.NO_1.8 / 80°
48M AF	64M AF		
F.NO_2.0 / FOV_80°	F.NO_1.8/ FOV_81°		

## CAMERA MODULE LINE-UP\_OIS MODEL

8M OIS	10M OIS	12M OIS	12M OIS
F.NO_2.4 / FOV_32°	F.NO_2.4 / FOV_35°	F.NO_2.4 / FOV_76°	F.NO_2.4 / FOV_36°
48M OIS	64M OIS	108M OIS	
F.NO_1.8 / FOV_80°	F.NO_1.8/ FOV_81°	F.NO_1.8 / FOV_85°	

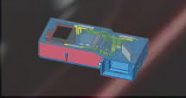
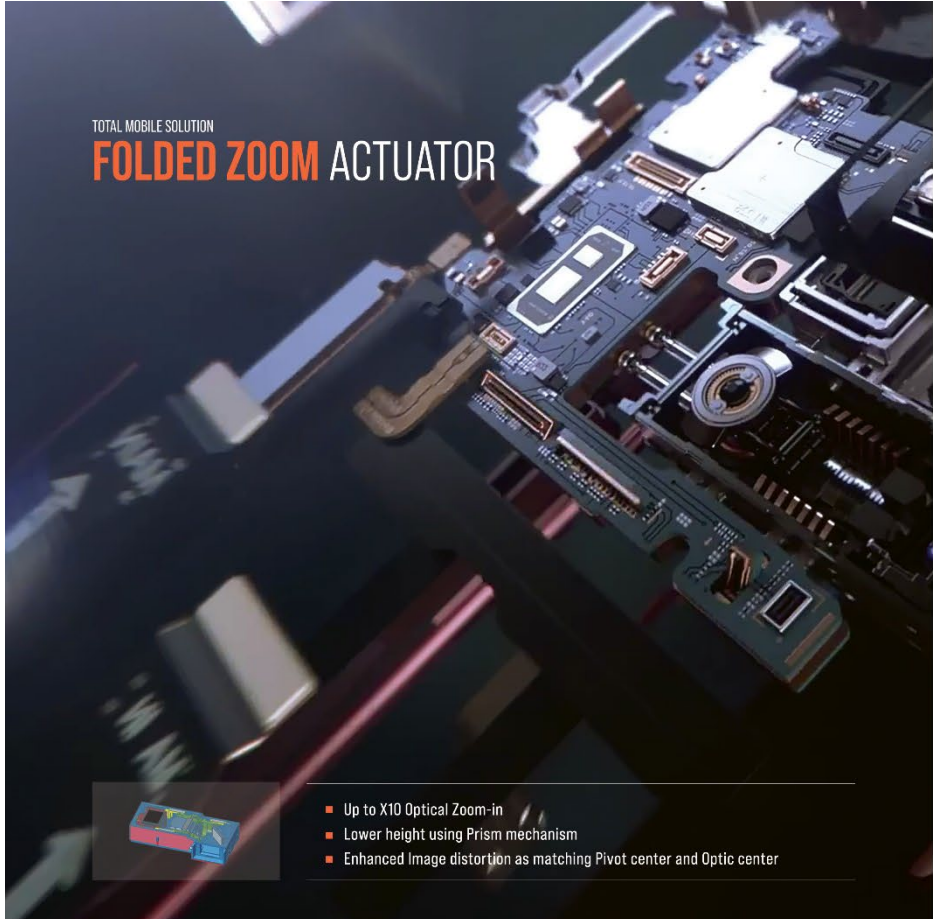
## CAMERA MODULE LINE-UP\_MULTI MODEL

65M AF / 12M AF	12M AF / 12M AF	64M AF / 12M FF / 5M FF	48M AF / 12M FF / 5M FF
65M : F.NO_2.0 / FOV_76° 12M : F.NO_1.8 / FOV_79°	12M(L) : F.NO_2.2 / FOV_80° 12M(R) : F.NO_2.4 / FOV_120°	64M : F.NO_1.8 / FOV_81° 12M : F.NO_2.2/ FOV_123° 5M : F.NO_2.2 / FOV_84°	48M : F.NO_2.0 / FOV_80° 12M : F.NO_2.2/ FOV_123° 5M : F.NO_2.4 / FOV_78°
24M AF / 10M FF / 8M FF / 5M FF			
24M : F.NO_1.7 / FOV_77° / 10M : F.NO_2.4/ FOV_45° 8M : F.NO_2.4 / FOV_120° / 5M : F.NO_2.2 / FOV_85°			



TOTAL MOBILE SOLUTION

# FOLDED ZOOM ACTUATOR



- Up to X10 Optical Zoom-in
- Lower height using Prism mechanism
- Enhanced Image distortion as matching Pivot center and Optic center

## AF SPEC

ITEM	UNIT	SPEC
Rated Stroke	um	Min 2410
Hysteresis	um	Max 12
Linearity	um	Max 20
Holding Current	mA	Max 40
Actuating Tilt	Min	Max 10

## OIS SPEC

ITEM	UNIT	SPEC
Rated Stroke	Deg	Min 2.4 (±1.2)
Hysteresis	Deg	Max 0.10
Linearity	Deg	Max 0.11
Max current	mA	Max 100
Phase margin	Deg	Min 25
Loop Gain	dB	Min 20

TOTAL MOBILE SOLUTION

# TOF CAMERA



## TOF CAMERA MODULE

Proved that the optical FOWLP can be used for ToF sensor application. 20% smaller, and 230um thinner module is possible.



## SPECIFICATION

ITEM	MIN	NORMAL	MAX	UNIT	REMARK
PKG Height	222	270	318	UM	
Ball Pitch X	-	500	-	UM	
Ball Pitch Y	-	500	-	UM	
Total Ball Count	-	314	-	EA	
Resolution		320X240		PX	QVGA
Modulation frequency of VCSEL Driver	20		100	MHZ	
VCSEL wavelength		940		NM	

## KEY FEATURES

Size	Removal of PCB, substrate-less
	3D stacking of TOF sensor and the driver IC
	Thickness reduction (>230um)/ Area reduction (>20%)
Easy mounting	No Ceramic Carrier or substrate PCB needed
	Use ACF film or SMT process to electrically assemble the FOWLP onto the F-PCB
Mass-production	The optical FOWLP is fabricated by the wafer level process with mass- production capability.

## OUTSIDE VIEW AND FEATURE

Applying Module Tilt method result in NO Image Distortion

Stabilization angle is twice better than existing products (1.5 deg → 3 deg)

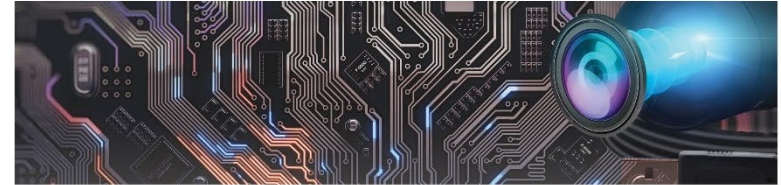
Module Tilt OIS : Vibration Reduction + External Tremors Reduction

Module Tilt method applied for mobile devices (Patent held by MCNEX)



## SPECIFICATION

ITEM	CONDITION
FOOT PRINT	A: 18.4 x 18.4 x 1.8H / B: 14.0 x 14.0 x 4.7H
STABILIZING ANGLE	± 3deg
MAX CURRENT	AF : 50mA / OIS : 100mA (TBD)
PIXELS	48M
SENSOR	SONY 1/2" 48Mega CMOS IMX586-AAJH5-S
SENSOR SIZE	4.504mm(H) x 5.659mm(V)
LENS	SUNNY 39256
LENS SPEC	Φ8.25/6P
AF STROKE	380~430um



## 5MP USB CAMERA BOARD



Item	USB Camera SPEC
Form factor	PCB Module Type
PCB SIZE	50mm x 7mm x 0.8T
Camera Resolution(MAX)	5MP(2592x1944)
Image Sensor	1/5, Pixel size: 1.12um
Video Max frame rate	30fps @ 5Mp (2592 x 1944) / 30fps @ quad HD (2560 x 1440)
MIC	2MIC Support
I/O Interface	USB 2.0
Camera Interface(AP-Camera)	MIPI(CSI-2/4 lane)
Lens spec	4P, F2.4

## 8MP USB CAMERA BOARD



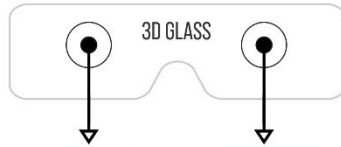
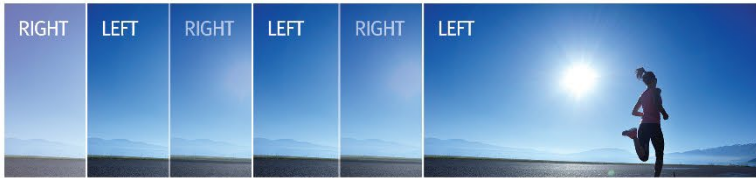
Item	USB Camera SPEC
Form factor	PCB Module Type
PCB SIZE	40mm x 12mm x1.0T
Camera Resolution(MAX)	8MP(3264x2448)
Image Sensor	1/4, 200um, Pixel size: 1.12um
Video Max frame rate	MJPEG: 8MP 10fps @(3264x2448),4:3 5MP 10fps @(2592x1944) 2MP 60fps @(1600x1200) / YUY2: 5fps @(1600x1200)
MIC	Option
I/O Interface	USB 2.0
Camera Interface(AP-Camera)	MIPI(CSI-2/4 lane)
Lens spec	4P, F2.2

TOTAL MOBILE SOLUTION

## 3D DEPTH CAMERA



2 cameras can be actuated by one controller. This controller can mix 3D image without any other software 2D or 3D is optional.



### SIDE BY SIDE (SHUTTER GLASS) IMAGE

As displaying right&left frame side by side, open and close a crystal shutter side by side to balance both sides of the frame timing



### DUAL CAMERA MODULE



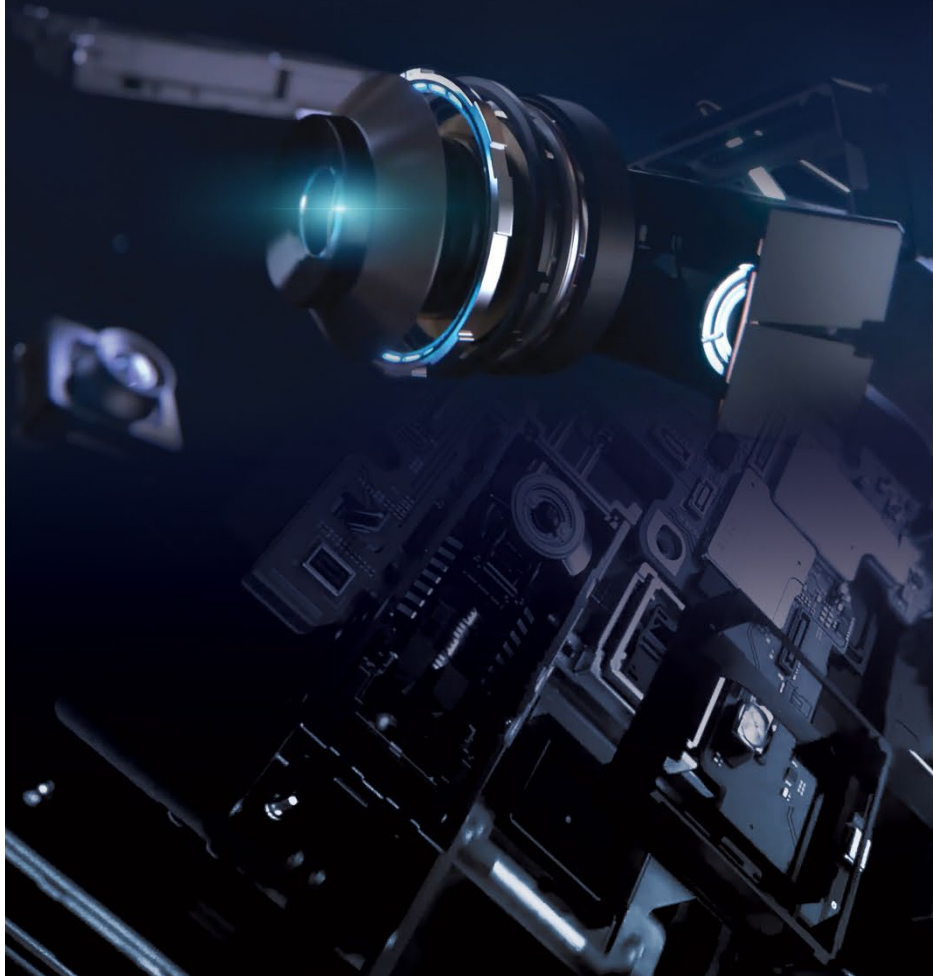
Application	AR, VR, MR, XR
Module Size	105mm x 10mm x 6.5mm
Pixel Size	1/4" CSP
Resolution	1 Mega pixel
I/F	USB3.0 & MIPI
F#	2.0
View Angle	180°
IR LED	850nm, 150°

TOTAL MOBILE SOLUTION















# ACTUATOR SOLUTION

VCM, ENCODER, OIS

STABLE PRODUCTION YIELD OF VARIOUS CAMERA MODULE  
5M FF ~ 108M AF, OPTICAL ZOOM IN / OUT



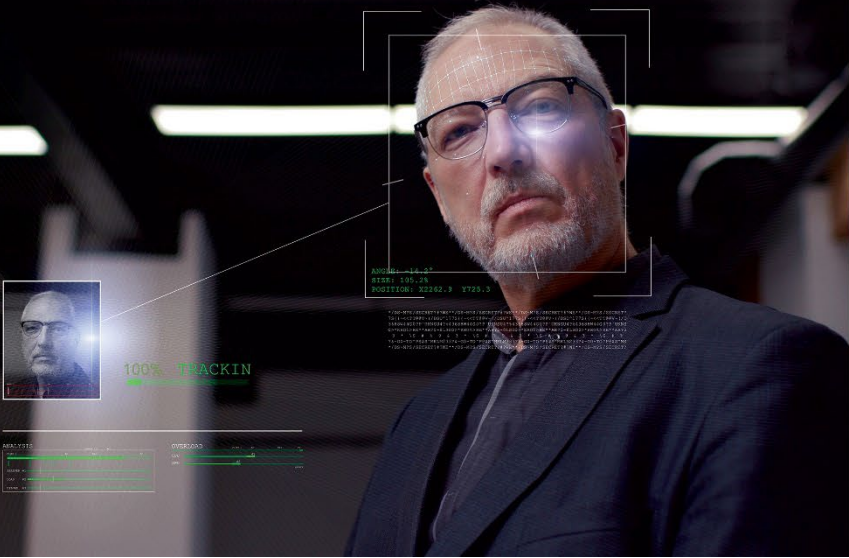
## ACTUATOR SOLUTION LINE-UP

PRODUCT	TYPE	RESOLUTION	DIMENSION
	CVCA (BALL)	40M	9.1X9.74 / 3.76T
	OIS (BALL)	64M	13.7X13.1 / 4.65T
	OIS (BALL)	12M	13.7X13.1 / 4.65T
	OIS (BALL)	10M	11.1 X 11.1 / 5.65T
	OIS (BALL)	64M	13.5 X 13.5 / 4.8T
	OIS (BALL)	8M	10.0 X 10.0 / 4.3T
	OIS (BALL)	48M	12.5 X 12.1 / 4.3T
	OIS (BALL)	12M	11.3 X 11.7 / 3.95T
	OIS (BALL)	64M	13.5 X 13.5 / 4.8T
	OIS (BALL)	50M	14.8 X 15.3 / 4.1T
	OIS (BALL)	12M 3X	11.1 X 11.1 / 5.15T
	OIS (BALL)	108M	13.9 X 13.9 / 4.8T
	ZOOM (BALL)	12M	36.2 X 14 X 6.2T
	OIS (BALL)	200M	18.0 X 18.7 X 4.9T

TOTAL MOBILE SOLUTION

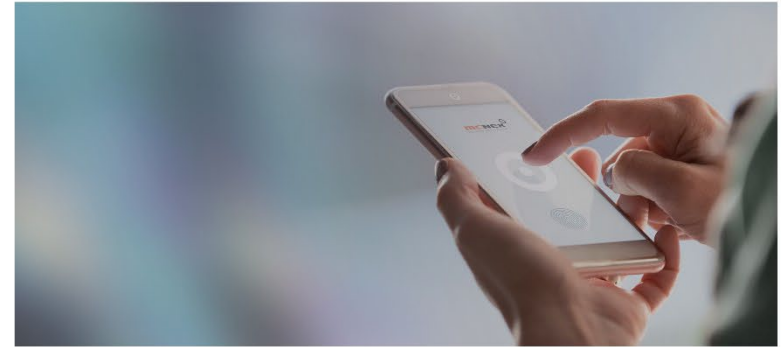
# BIOMETRIC SENSING SOLUTION

FINGERPRINT SENSING MODULE  
FACE RECOGNITION MODULE  
IRIS SCAN MODULE



BIOMETRIC SENSING SOLUTION

# FINGERPRINT SENSING MODULE



## CAPACITANCE FINGERPRINT SENSING MODULE



- SPECIAL COATING TECHNOLOGY (NON-SPRAY COATING)
- WIRE BONDING TECHNOLOGY FOR LOW LOOP CONTROL
- SPECIALIZED PROCESS FOR FINGERPRINT SENSOR MODULE
- GREAT PACKAGE PROCESSING AND INTERNALIZED PACKAGE

### CAPACITANCE LINE UP



## OPTICAL FINGERPRINT SENSING MODULE

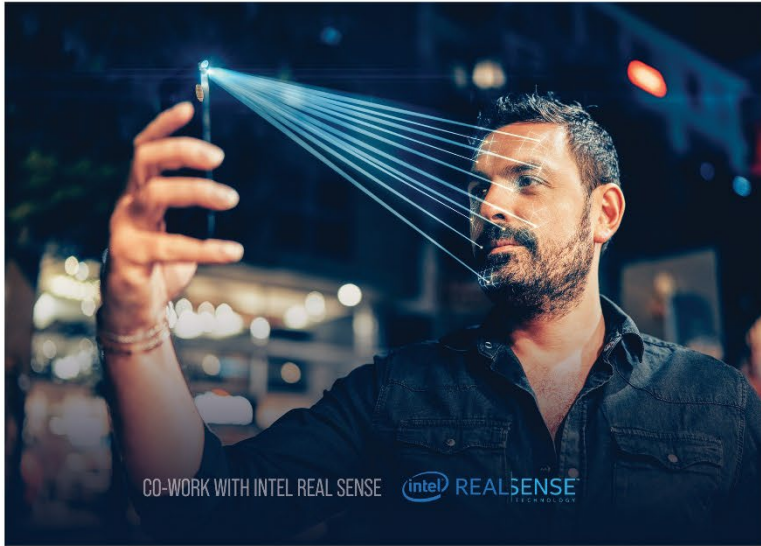


- HIGH VISIBILITY BY IN-DISPLAY TYPE
- INSTINCTIVE USAGE (DIRECT TOUCH TYPE TO OLED PANEL)
- HIGHER RESOLUTION THAN CAPACITANCE TYPE: 750 Dpi
- NO EFFECT TO OLED YIELD BECAUSE MODULE IS NOT CONTACT TO A PANEL.

### OPTICAL LINE UP



# FACE AUTHENTICATION SOLUTION



CO-WORK WITH INTEL REAL SENSE 

## FEATURES

1:1M FAR (False Acceptance Rate)	Low cost design
Highly Secure : Encrypted feature points	Working in all lighting condition : indoor, outdoor, dark etc.
Strong anti-spoofing	Passed Google Certification Test
Vast and Unique 3D & 2D IR databases	

## CURRENT PERFORMANCE

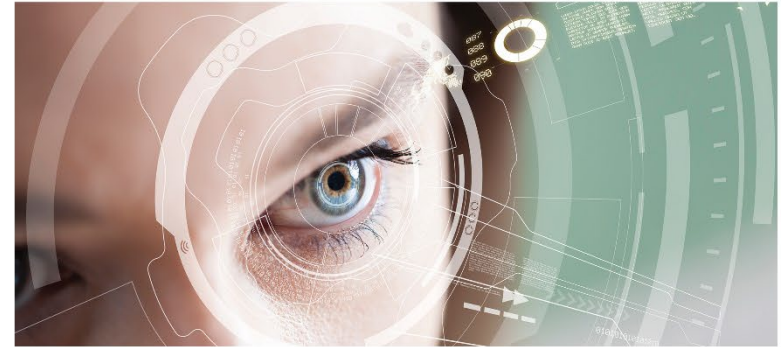
Face Recognition: FAR 1:1M, TAR 99.41%, FRR 0.59%

Anti Spoofing : SAR (Spoof Acceptance rate)< 1%

Distance: Max 70cm

ITEM	CONDITION
SIZE(mm)	12.7 x 7.2 x 3.25t (Focus 60cm)
PIXEL	2M
SENSOR	OV02A10 (1/5", 1.75μm)
Field of View	85.2°
F#	F2.0
TTL	2.7mm

# IRIS CAMERA MODULE



## FEATURES

Optimized Solution for "ALL EYE COLOR"

Applied IR-LED & Band pass filter of 810nm wavelength range

Running VT / IRIS Camera via Switching function

High recognition rate regardless of light from indoor-outdoor

## HIGH SECURITY / HIGH RECOGNITION RATE

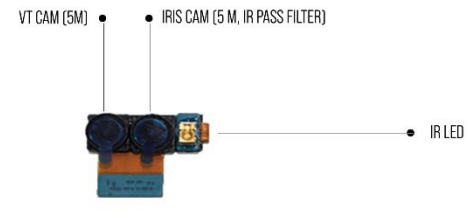
Unable to forge / falsify using photo, video, etc

Low rate of error recognition

Impossible to find same patterned iris

After infancy, iris is no longer changed

## SMART SECURITY



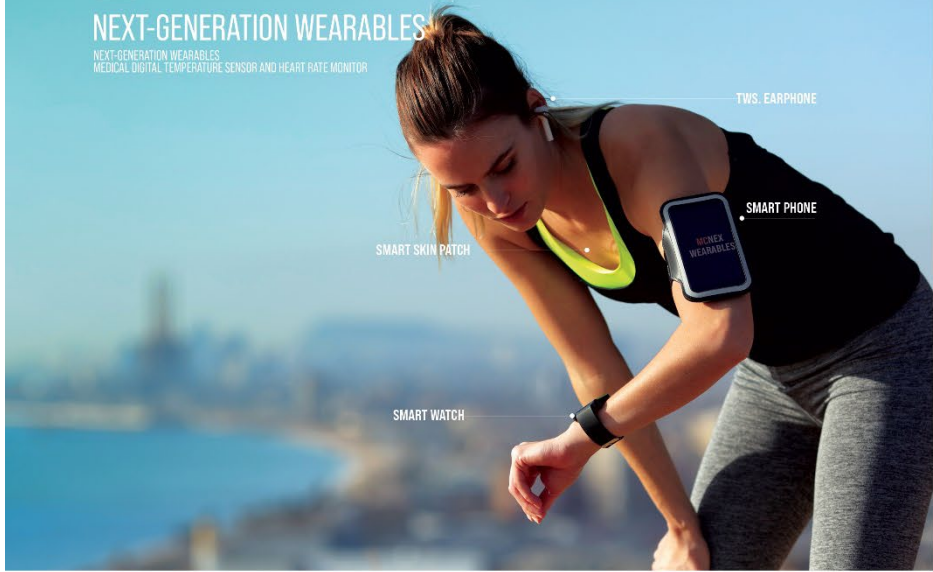
BIOMETRIC SENSING SOLUTION

# BODY TEMPERATURE SENSOR MODULE



## NEXT-GENERATION WEARABLES

NEXT-GENERATION WEARABLES  
MEDICAL DIGITAL TEMPERATURE SENSOR AND HEART RATE MONITOR



SMART SKIN PATCH

TWS. EARPHONE

SMART PHONE

SMART WATCH

Very small size (for wearable)	Accurate non-contact temperature measurement
Health tracker	Optimization of space utilization

### FEATURES

	SPEC
CH / FOV	4 Cell / 70°
Operating temperature	-20°C ~ 85°C
Medical accuracy	Satisfied
Interface	I2C, VDD(3.3v), GND
Module Size (mm)	5.20 x 13.32 x 1.78(t)
Deco Size (mm)	4.20 x 4.32



BIOMETRIC SENSING SOLUTION

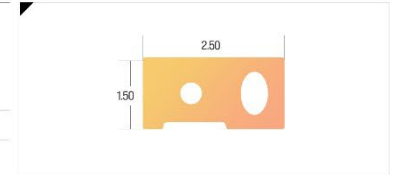
# SKIN SENSOR



Very small size (for TWS)	SMD Type
Skin detector	Accurate skin contact / fabric contact detection

### FEATURES

	SPEC
CH / FOV	2 Ch
Operating temperature	TBD
Interface	I2C, VCC, GND
Module Size (mm)	2.50 x 1.50 x 0.80(t)



TOTAL MOBILE SOLUTION

# PPG MODULE

HEART PULSE. BODY FAT SENSOR MODULE

Heart Pulse, Oxygen Saturation, Body Fat	Module Type
Optical, Impedance Type	1Ch ~ 8Ch Custom

### FEATURES

	SPEC
PD CH	1Ch ~ 8 Ch
LED	Green, Red, IR
Operating temperature	-20 °C ~ + 60 °C
Interface	SPI/I2C, VCC, INT, GND
Module Size (mm)	Design By Custom



BUSINESS AREA

# SYSTEM SOLUTION

## IMAGE SOLUTION + 6G, ICT

As creative pioneer, leading innovation and technology by continuous research, development create safe and convenient world that everyone dreams of



### SYSTEM SOLUTION

DASHCAM  
GOLF RANGE FINDER  
NETWORK CAMERA  
MEDICAL CAMERA  
AR/VR/MR CAMERA  
USB CAMERA



eyeCLON

MCNEX's core value is to let the world experiencing the best image system solution for more convenient world  
Eyeclon is the brand made by MCNEX Co., Ltd. with the technical competence in the camera module industry.

SYSTEM SOLUTION  
**DASHCAM**



QHD 3CH DASH CAM  
**MD - Q** WIFI 2.4GHZ WIRELESS CONNECTION  
RADAR SENSOR  
CAPACITIVE TOUCH  
GPS+GLONASS+QZSS



Model	MD-Q	
Resolution	Front: 2560x1440/Rear: 1920x1080(2ch)	
Image Sensor	Front	SC500AI / 135°(D) x 113°(H) x 61°(V) @30fps
	Rear	SC223A (1/2.8") 146°(D) x 116°(H) x 62°(V) @30fps
LCD	2.0" TFT IPS LCD with Capacity Touch	
GNSS	Built in support(GPS, BEIDOU, QZSS)	
Memory Capacity	Micro SD Card up to 256GB	
Motion detection	3 Axis Acceleration Sensor & Radar Sensor	
Power	DC 12V/24V	
Operating Temp	-20°C ~ 60°C	
Dimension, weight	56x42x29mm / 119g	
ADAS	LDWS, FCWS, FVSA	





**L7PRIME** LTE DASHCAM IMPLEMENTING  
WORLD FIRST SOUND PRESSURE SECURITY TECHNOLOGY FOR WARNING THEFT PROTECTION

INTRUDING PROTECTION	Detecting sound wave when intruding
THEFT PROTECTION	Warning when intruding into a car
ALARMING CAR FIRE	Alarming when car is firing
IDENTIFYING PARKED LOCATION	Texting a parking location when parked
MANUAL RECORDING	Check the recorded video after manual recording by smart phone app.
DUAL BAND	LTE / WCDMA
CONTROLLING LOCATION/VIDEO/ STATUS	Check location and recorded video remotely



Model	CLON L7 PRIME	
Resolution	Front: FHD1920x1080/Rear: 1280x720	
Image Sensor	Front	1/2.9" CMOS Color Image Sensor
	Rear	1/4" CMOS Color Image Sensor
Frame Rate	30fps(Front & Rear)	
View Angle	Front: 130°, Rear: 118°	
LCD	3.5 inch HVGA	
GPS	External	
Memory Capacity	Micro SD Card Support up to 64GB	
Power	DC 12V/24V, Super Cap	
Operating Temp	-20°C ~ 60°C	
Dimension(mm)	112 X 69 X 42mm / 175g	
ADAS	LDWS, FCWS, FVSA, OBD II	
LTE Feature	Real time monitoring and alarm via smartphone app	



Model	MD-W
Size/Weight	59(W) x 43(H) x 29(D) / 75g
Micro SD card capacity	up to 256GB
Resolution	Front / Rear: FHD (1920 x 1080)
Front Camera	IMX 307 / 105° (H) x 56° (V) x 126° (D)
Rear Camera	IMX 323 / 105° (H) x 56° (V) x 126° (D)
Audio / Speaker	Embedded microphone / speaker
Frame Rate	Front / Rear : Max 30 Frame
Acceleration Sensor	3 Axis Acceleration Sensor
GPS	External GPS Port
Input Power Source	DC 12 / 24V
Auxiliary Power Unit	Super Capacitor
Operating Temp	-10°C ~ 60°C



<b>Model</b>	<b>MD-TX</b>
<b>Resolution</b>	Front: 1920x1080/Rear: 1920x1080/Side: 1280x720
<b>Image Sensor</b>	<b>Front</b>
	SC2315 1/2.7" , 30fps, DFOV:150°
	<b>Side</b>
C600, 30fps , DFOV:110°	
<b>Rear</b>	CS+F37, 30fps , DFOV:134°
<b>LCD , GPS</b>	4.0" TFT IPS LCD(800x480), External support
<b>Memory Capacity</b>	Micro SD Card up to 128GB
<b>Power</b>	DC 12V/24V
<b>Operating Temp</b>	-10°C ~ 60°C
<b>Dimension(mm)</b>	110X83.5X30mm
<b>ADAS</b>	LDWS, FVSA



2CH FHD



ADAS



IPS DISPLAY



SECRET MODE



LOW ENERGY



TIME LAPSE

**CLON5000** 2CH DASHCAM  
FHD+FHD



<b>Model</b>	<b>CLON5000</b>
<b>Resolution</b>	Front: 1920x1080/Rear: 1920x1080
<b>Image Sensor</b>	<b>Front</b>
	SOI JX-F22 1/2.7" F2.0 @ 30fps, DFOV:140°
<b>Rear</b>	SOI JX-F22 1/2.7" F2.0 @ 30fps, DFOV:140°
<b>LCD , GPS</b>	3.5" TFT IPS LCD, External Support
<b>Memory Capacity</b>	Micro SD Card up to 64GB
<b>Power</b>	DC 12V/24V, Super Cap
<b>Operating Temp</b>	-10°C ~ 60°C
<b>Dimension(mm)</b>	98X63X32mm
<b>ADAS</b>	LDWS, FCWS, FVSA

**CLON3000** 2CH DASHCAM  
FHD+HD



<b>Model</b>	<b>CLON3000</b>
<b>Resolution</b>	Front: 1920x1080/Rear: 1280x720
<b>Image Sensor</b>	<b>Front</b>
	SOI JX-F22 1/2.7" F2.0
<b>Rear</b>	SOI JX-H62 1/4" F2.0
<b>Frame Rate</b>	30fps(Front & Rear)
<b>View Angle</b>	Front: 140°, Rear: 120°
<b>LCD</b>	3.5" TFT TN LCD
<b>GPS</b>	External Support
<b>Memory Capacity</b>	Micro SD Card up to 64GB
<b>Power</b>	DC 12V/24V, Super Cap
<b>Operating Temp</b>	-10°C ~ 60°C
<b>Dimension(mm)</b>	98X63X32mm
<b>ADAS</b>	LDWS, FCWS, FVSA

SYSTEM SOLUTION

# GOLF LASER RANGEFINDER



**HIGH SPEED. HIGH ACCURACY  
2 COLOR OLED  
PERFORMANCE**

SYSTEM SOLUTION

# VOICE RECOGNITION GOLF RANGE FINDER

**BUDDYCLON  
GOLF GPS RANGE FINDER  
GV.1**

All the functions needed for golf ranging



**VOICE RECOGNITION GOLF RANGEFINDER**

WATER-RESISTANCE, GPS+GLONASS+QZSS, VOICE RECOGNITION, POGO CHARGING CABLE, BLE 5.1, ALTITUDE REFLECTION DISTANCE MEASUREMENT



GPS, GLONASS, BEIDOU, QZSS



VOICE RECOGNITION



POGO CHARGING CABLE



BLE 5.1



ALTITUDE REFLECTION DISTANCE MEASUREMENT

**FEATURES**

- High Quality Optical Lens(lens & Prism)
- Bright adjustable 2Color OLED(Red, Green)
- Calculate a distance reflecting altitude as supporting Slope Mode
- High Speed measuring distance
- Meter/Yard
- High Accuracy
- Water&dust proof: IP54
- CR2 Battery(Replaceable)
- Anti-hand shaking(Pin seeker , Jolt)
- Slope mode/non slope mode/scan mode
- Indicator LED(Slope mode: LED On)

**Items**

**Spec**

<b>SIZE / Weight</b>	107.35x38.17x69.03mm/T.B.D
<b>Battery</b>	CR2
<b>View LCD</b>	2Color OLED
<b>Range</b>	0~1,200YD
<b>Accuracy</b>	0.3YD-0.5YD-1YD
<b>Speed [sec]</b>	0.1S-0.3S-0.5S
<b>Optic zoom</b>	X6
<b>FOV</b>	7°
<b>Water/dust proof</b>	IPX54
<b>Slope Mode</b>	Support
<b>Operating Temp.</b>	-20°C ~ 50°C

**FEATURES**

- Measure a distance to a green hall by voice command
- Support multi satellite system, Gain over 24 satellites
- Map update through Blue Tooth
- Calculate a distance reflecting altitude
- Meter/Yard
- Measure a ball travel distance (Long Key)
- Setting menu on a smart phone by app.
- Auto detect a golf course and hall
- Select a green (left green/right green/both)
- Support Pogo charging port(Magnetic pogo type)

**Items**

**Spec**

<b>SIZE</b>	φ44-φ35, 12.4mm(H)
<b>Weight</b>	22.5g
<b>GPS</b>	GPS, GLONASS, QZSS, BEIDOU
<b>Voice recognition</b>	O ("Hi-Alice")
<b>Bluetooth</b>	O (BLE 5.1)
<b>Battery</b>	Chargeable Lithium Polymer
<b>Charging type</b>	Pogo Cable 4pin
<b>Operating time at full charging</b>	0hr~
<b>Trigger type for distance Guide</b>	Voice command or Button
<b>I/F</b>	<b>Wireless</b> Blue Tooth
	<b>Cable</b> USB

# SMART GLASSES



## HIGHLY SIMPLIFIED OPTIC STRUCTURE TO ENSURE

1. High efficiency of image data transmitting
2. Unique system lens to deliver 2D and 3D images
3. Lighter and smaller smart glass device

## CENTER-MOUNTED OPTIC MODULE TO PROVIDE

1. Wider view angle compared to side-mounted ones
2. Unique system lens to deliver 2D and 3D images
3. Fit in any stylish design for any application

## CENTER-MOUNTED OPTIC MODULE

Our center-mounted optic module enables wide view angle for our glasses, solving one of the most difficult challenges faced by other smart glasses

Center-mounted optic module also allows us to design our glasses more stylish, compared to other models that are bulky and inconvenient to handle

## BEST-IN-CLASS OPTIC DESIGN

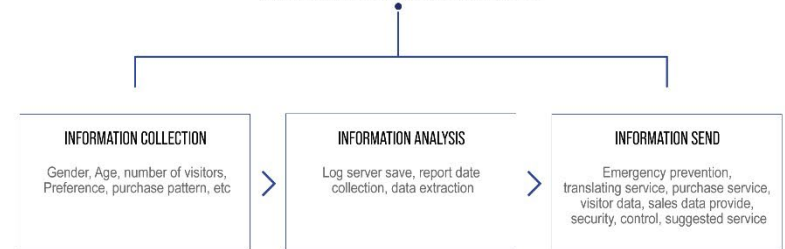
Our patented technology enables us to use extremely thin beam splitter (2mm) as part of the optic module, making our glasses light weight and more comfortable to wear

Even with our minimum-sized optic module, the virtual images are created far enough from your eyes which makes refocusing of your eyesight unnecessary in order to view images

# SMART MEDIA



## IOT, ICT CONVERGENCE OF IMAGE SOLUTION AND ICT TECHNOLOGY



## SMART DID CES BOOTH IN 2019



BUSINESS AREA

# OEM. ODM. EMS

## TECHNOLOGY RESEARCH AND QUALITY MANAGEMENT SYSTEM

We serve our customers better by listening to them, developing genuine understanding through trusted relationships, and responding to their needs.



OEM. ODM. EMS

## VIETNAM FACTORY OVERVIEW



NINH BINH, VIETNAM FACTORY L1, L2, L3, L4  
LOCATION - NINH BINH, HA NOI

<b>MANUFACTURING SITE</b>	Phuc Son Industrial Park, Ninh Binh City, Vietnam		
<b>FACTORY SIZE</b>	<b>Land Area</b>	<b>Building Area</b>	<b>Employees</b>
	150,000 m <sup>2</sup>	127,338 m <sup>2</sup>	6,124
<b>ITEM &amp; CAPACITY</b>			
	<b>Mobile Camera</b>	<b>Actuator</b>	<b>Biometric</b>
	30M / Month	11M / Month	9M / Month
			
	<b>Automotive Camera</b>		
	1.5M / Month		

CAPABLE OF RESPONDING TO THE VARIOUS NEEDS OF CUSTOMERS "NEW PRODUCTION AND TOLL PROCESSING AVAILABLE" AREA



3TH FACTORY TOTAL AREA 24,000 m<sup>2</sup>



2 FLOOR - 12,000 m<sup>2</sup>



3 FLOOR - 12,000 m<sup>2</sup>

OEM, ODM, EMS

# COMPETITIVENESS

## VERIFIED QUALITY MANAGEMENT SYSTEM

Robust quality management system established through co-work with SAMSUNG, HKMC, Japan & US Customer + HKMC 5 Star (Quality system)

FACTORY SYSTEM. ERP. MES. PLM SYSTEM FULLY ESTABLISHED



ERP (Enterprise Resource Planning)



MES (Manufacturing Execution System)



PLM (Product Lifecycle Management)

### FACTORY CERTIFICATES

IATF16949

ISO14001

ISO45001

OHSAS18001

ISO26262

## DEVELOPMENT / PRODUCTION QUALITY MANAGEMENT PROCESS

PRODUCT VERIFICATION

LESSONS LEARNED

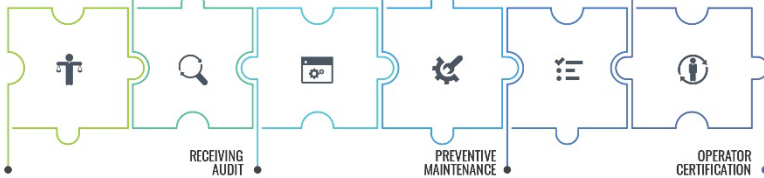
LAYERED AUDIT

FINAL AUDIT

SUPPLIER AUDIT

PROCESS AUDIT

PROCESS VERIFICATION



SYSTEM

IATF16949

SYSTEM AUDIT

PROCESS AUDIT

## GLOBAL NETWORK – ON-TIME DELIVERY



Factory/R&D	Korea(Seoul), Vietnam(Hanoi)
Sales office	Korea(Seoul), Vietnam(Hanoi), China(Shanghai), USA(San Jose), Japan, Taiwan
Cost competitiveness	Factory located in bonded area    Standard laboring days in Vietnam : 6days a week & Low laboring cost
Labor friendly factory environment	No laboring dispute since establishment of Vietnam Factory [2013 ~ now] "Excellent enterprise award for labor environment"    MES System
Logistics advantages	Through FTA, can be shipped any country without worrying (US / CN / EU / AU / Pacific, etc.) Vietnam-US tariff agreement → (Cheap tariff due to TPP contract) Fast custom clearance : 1~2days earlier custom clearance than others(Factory located in bonded area)
Enough space in MCNEX's 3rd Vietnam Factory for "New project & New customer"	

## VARIOUS EXPERIENCE OF IMAGE SOLUTION TECHNOLOGY

Co-work with HKMC for ADAS camera system	Co-work with Microsoft for stereo camera development for AR, VR application
Selected as a standard module of iris recognition camera system into Qualcomm AP chip	
Development of camera system for ADAS application with TI, NXP & Socio Next AP	
Co-develop with Corephotonics for front camera	Camera module development for Autonomous driving level 3 / Level 4
18years of experience in the field of camera module: Single / Dual / Tri-Focal / Quadruple	
Abundant experience of government project for advanced technology	