

# Intro To New Driver State Monitors

**December, 2021**



# Product Overview

kaza 15 YEAR

AUTHORIZED  
DISTRIBUTOR

VUEMATE



## Discontinued Models



Driver State Monitor  
for Passenger Cars  
(DL220A)



Smart Eco Charger  
(DL110A)

## Current Models



Driver State Monitor  
for Passenger Cars  
(DL330A)



Driver State Monitor  
For Commercial Vehicles  
(DL550A)

\*\* Will be discontinued from YR2022

## New Models (SE series)



Driver State Monitor  
for Passenger Cars  
(SE1)



Driver State Monitor  
For Commercial Vehicles  
(SE3)

\*\* Started being sold since YR2021



# New Features and Functionalities














- 3rd generation line-ups
  - Mask-wearer recognizable
  - Powerful performance with Cortex-A7 @1.2GHz SoC
  - No adjustment required as per driver's height using HD image sensor
  - Improved detection rate in every events
  - Easy configurations and firmware updates through micro SD card like the dash cam
  - Useful snapshot captured and sent through RS232 by the command when each event occurs ●
- Customized alarm sound and voice announcement by user's requirements
- More sophisticated features added, such as detections for yawing as well as smoking and handset usage
  - Driver's recognition available for ID check (TBD)
  - Secured mounting cradle with tamperproof Torx screw and extension bracket (for SE3) ●
- Smart phone streaming by apps with built-in BLE module (for SE1, TBD)
- More others...

# Basic Specification



CLASSIFICATION		SE3	SE1
Photo			
CPU/Sensor		ARM Cortex A7 1.2GHz/HD Image CMOS Sensor	
Alarm	Speaker	O	
	LED	R (Power), G (GPS), G (BT)	
Storage (Firmware Update / Event Snapshot Capture & Save/Sent)		16GB MicroSD Card	
Power Supply		12/24 VDC	
Operating Voltage		5 VDC (Main) / 11.6 VDC (4*IRLEDs)	5 VDC (Main) / 6 VDC (2*IRLEDs)
Detectable Events		<ul style="list-style-type: none"> <li>- 1<sup>st</sup> &amp; 2<sup>nd</sup> Drowsiness</li> <li>- Distraction</li> <li>- Facial departure</li> <li>- Smoking</li> <li>- Handset usage</li> <li>- Yawning</li> <li>- Face ID (Option)</li> </ul>	
Operating Temperature		-20 ~ +70°C	
Physical Dimension (W x D x H / Bracket excluded)		111.3 x 67.1 x 43.2mm	74.8 x 53.0 x 23.8mm
Detectable Distance		90 ~ 110cm	60 ~ 80cm
Mounting Position		Dashboard/Windshield	Column cover
Interfaces with External Devices		<ul style="list-style-type: none"> <li>- Monitor (TV Out_CVBS)</li> <li>- Modem or MDVR (RS232)</li> <li>- GPS (UART)</li> <li>- Vibrating cushion (GPIO/DC-Out)</li> <li>- Smart phone streaming via Bluetooth (Option)</li> </ul>	<ul style="list-style-type: none"> <li>- GPS (UART)</li> <li>- Vibrating cushion (GPIO/DC-Out)</li> </ul>

EVENT	ALARM	STATUS LED
Booting	Paraparapam ~ (after booting)	 →  → 
Normal Driving		
Distraction	Ding ~ Ding ~	 → 
Drowsiness	Beeep ~ (1 <sup>st</sup> ), Whistle/Siren (2 <sup>nd</sup> )	
Yawning	Beep ~ Beep ~	
Facial Departure	Beep ~ Beep ~	
Smoking	Beep ~ Beep ~	
Handset Usage	Beep ~ Beep ~	

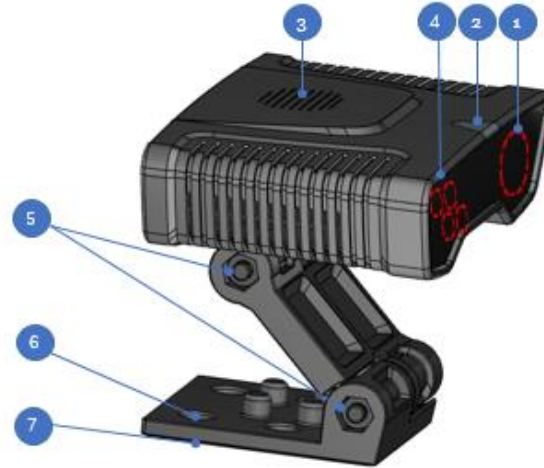
※ Alarm can be changed as per customer's requirements.



# Names of Each Part

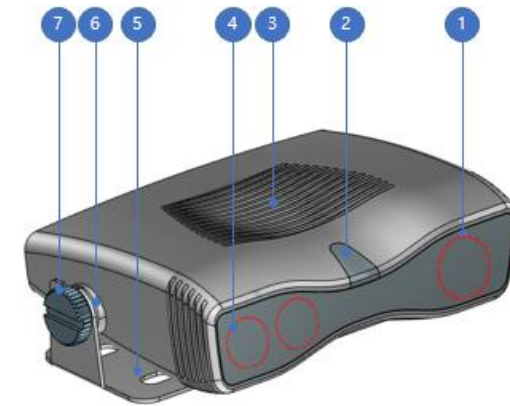
## SE3

①	Camera
②	Status LED (RGB)
③	Speaker Holes
④	IRLED (4ea)
⑤	Fix/Angle Adjustable Screws
⑥	Screw Hole
⑦	Bracket Plate
⑧	Function Switch (Volume/Sensitivity)
⑨	Multi I/O Cable Port
⑩	MicroSD Card Slot

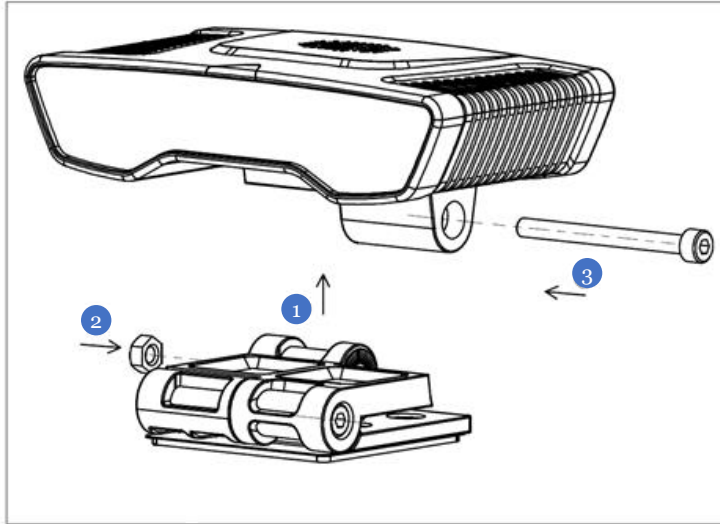


## SE1

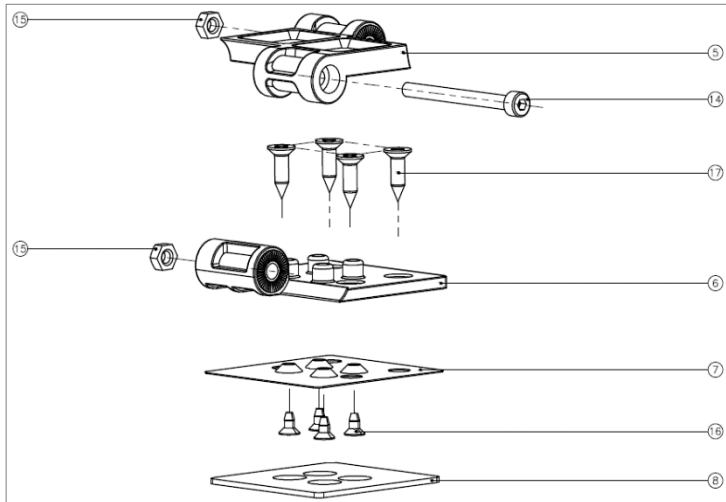
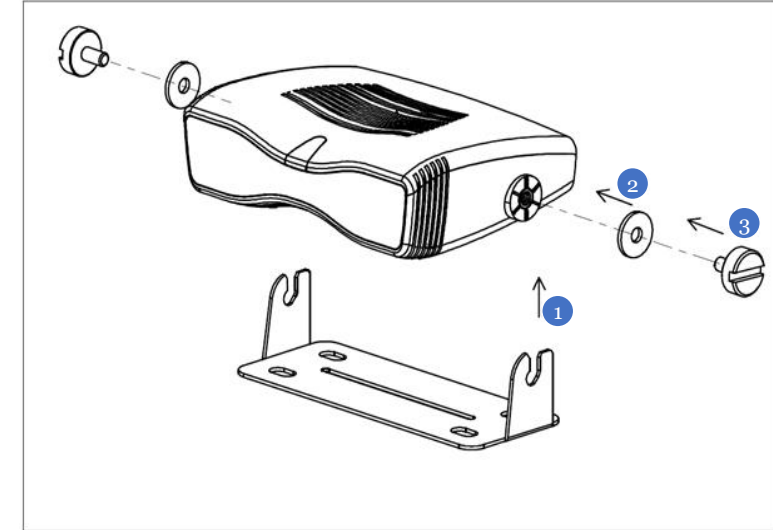
①	Camera
②	Status LED (RGB)
③	Speaker Holes
④	IRLED (2ea)
⑤	Cradle Bracket
⑥	Rubber Washer
⑦	Fix Screw
⑧	Micro USB (UVC)
⑨	MicroSD Card Slot
⑩	Function Switch (Volume/Sensitivity)
⑪	UART (GPS)
⑫	Power Port (DC Jack)



**SE3**



**SE1**



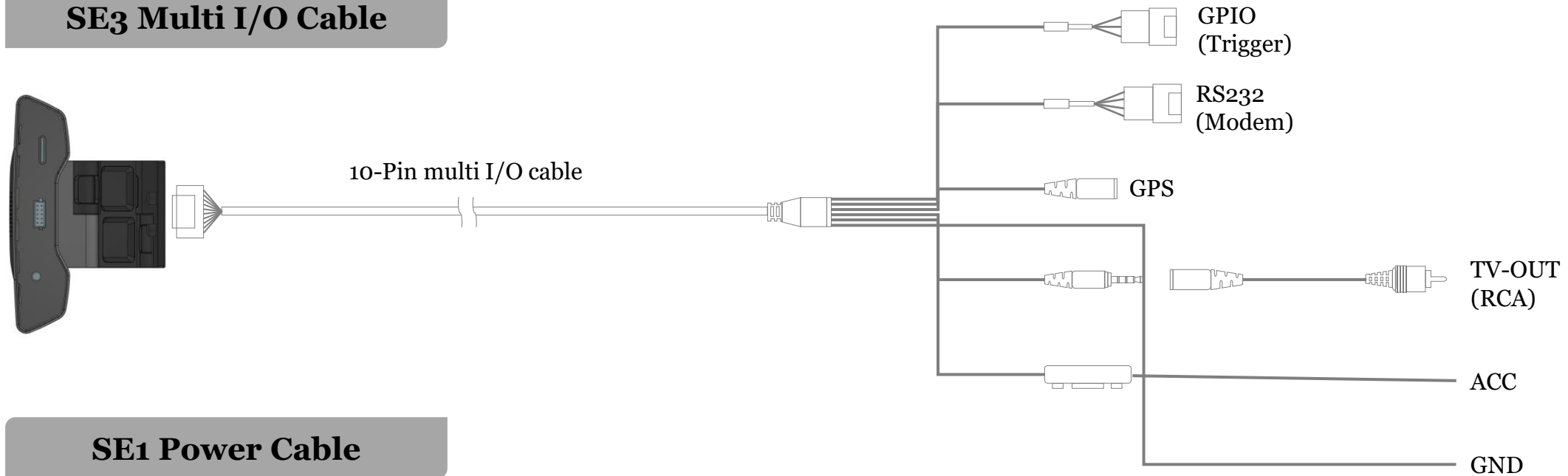
No	Part Name	Q'ty
5	Bracket	1
6	Bracket Plate	1
7	Metal Plate	1
8	3M Adhesive Double-sided Tape	1
14	Tamper Proof Security Bolt (M4 x 45)	2
15	Tamper Proof Security Nut (M4 x 3.2)	2
16	Tapping Screw (TP3 x 6)	4
17	Tapping Screw (TP4 x 15)	4

No	Part Name	Q'ty
1	Cradle Bracket	1
2	Rubber Washer	2
3	Fix Screw (TP2 x 3)	2

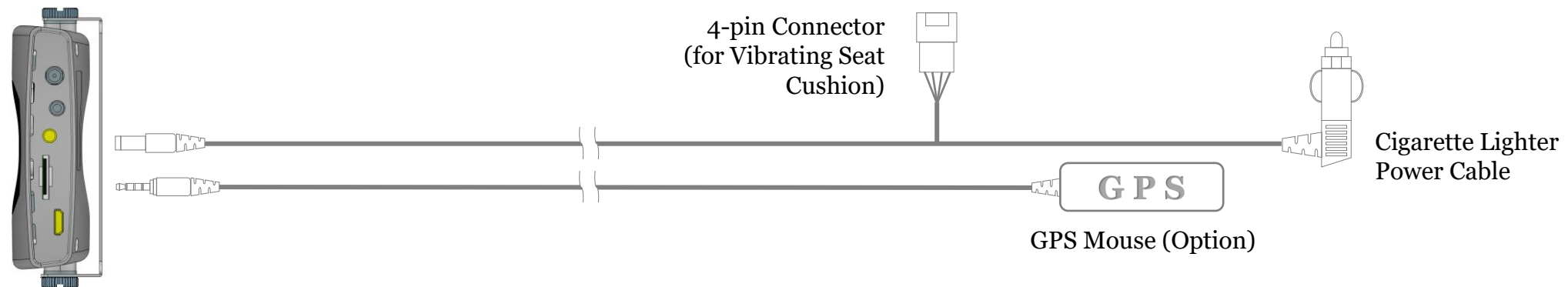
※ Cradle bracket is to be inserted between rubber washer and fix screw.



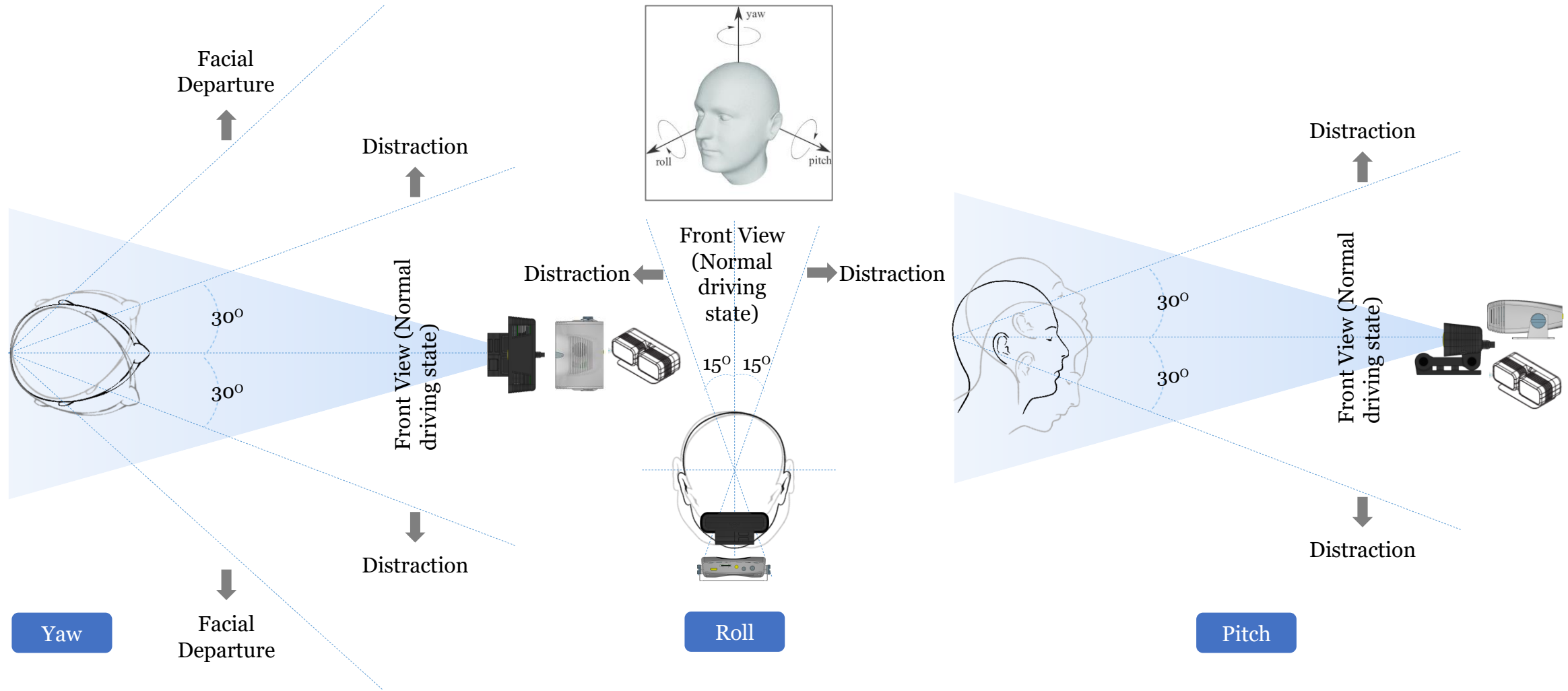
## SE3 Multi I/O Cable



## SE1 Power Cable



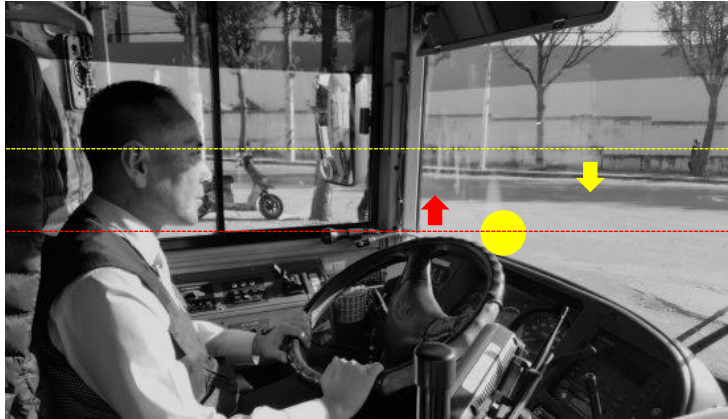
# Recognition Angles





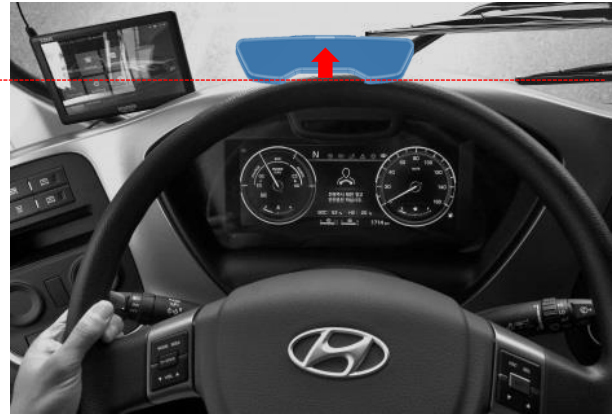
# Mounting Guide

SE<sub>3</sub>



Commercial Vehicles (Bus, Heavy-duty truck, and Special vehicle)

- Mounting position: On dashboard
- Detectable Distance: 90~110cm

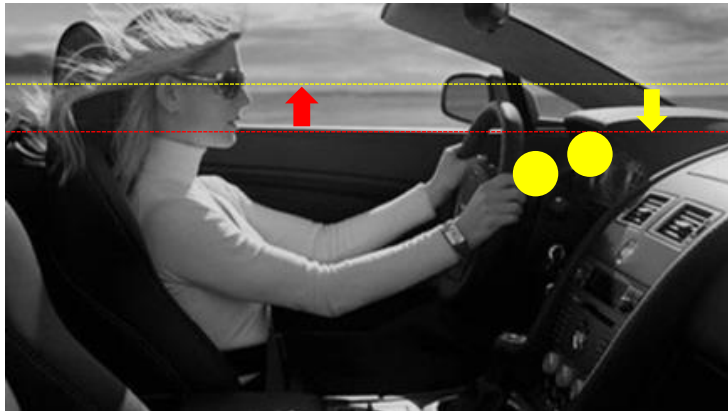


Mounted on the dashboard (Front view)



Mounted on the dashboard (Side view)

SE<sub>1</sub>



Passenger Cars (SUV/VAN/Small- & Medium Truck)

- Mounting Positions: On column cover or cluster panel
- Detectable Distance: 60~80cm



Cluster panel

Column cover

# Event Detection Process



## Step 1: Find the face and eye position and detect eye state:

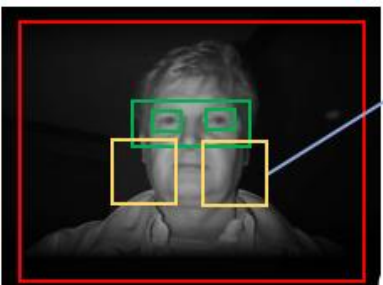


Region A – Search for Face and Eye location.



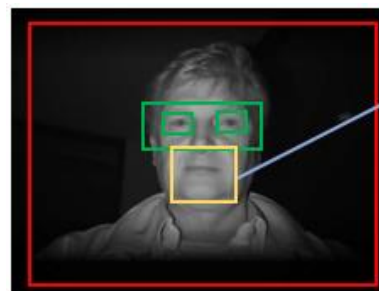
After eyes are found, detect eye state.

## Step 2: Based on eye position, calculate location of left and right side of face for handset detection:



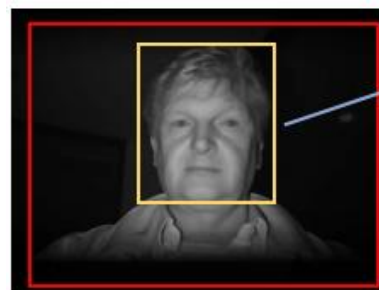
Region B – Search for handset usage.

## Step 3: Based on eye position, calculate location of mouth for smoking and yawning detection:



Region C – Determine yawning state.  
– Search for smoking.

## Step 4: Based on face position, do face recognition:

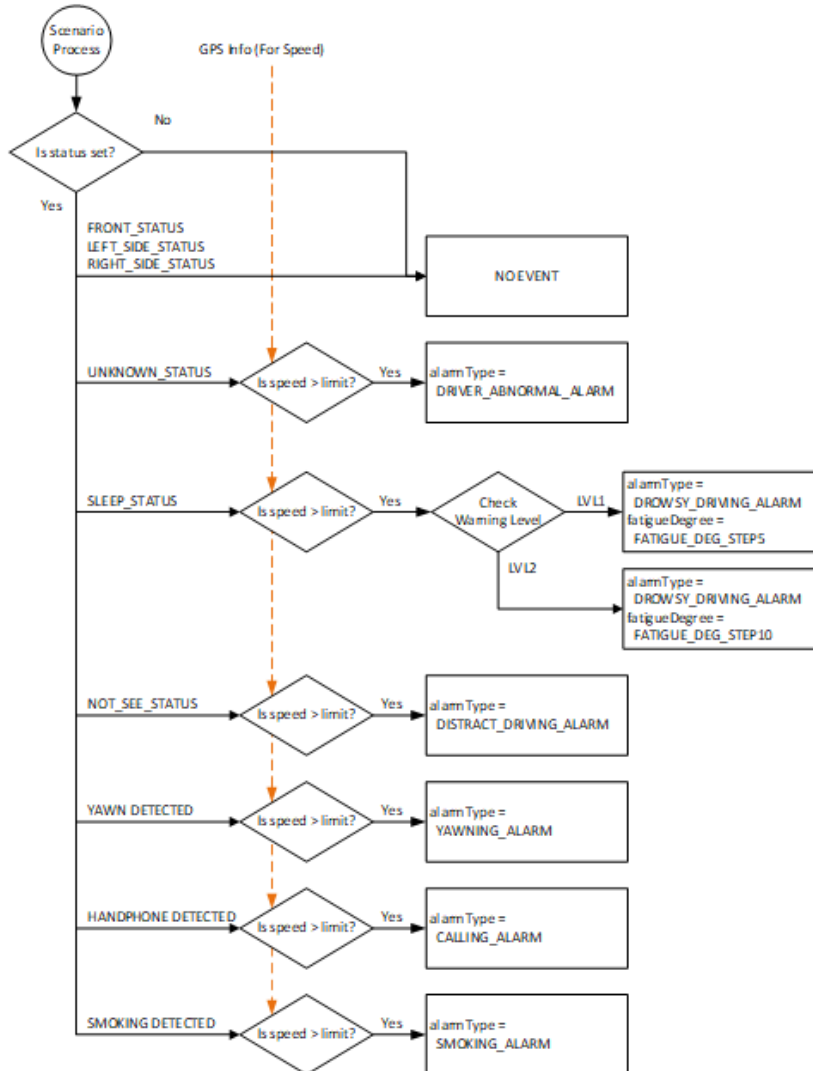


Region D – Perform face recognition.

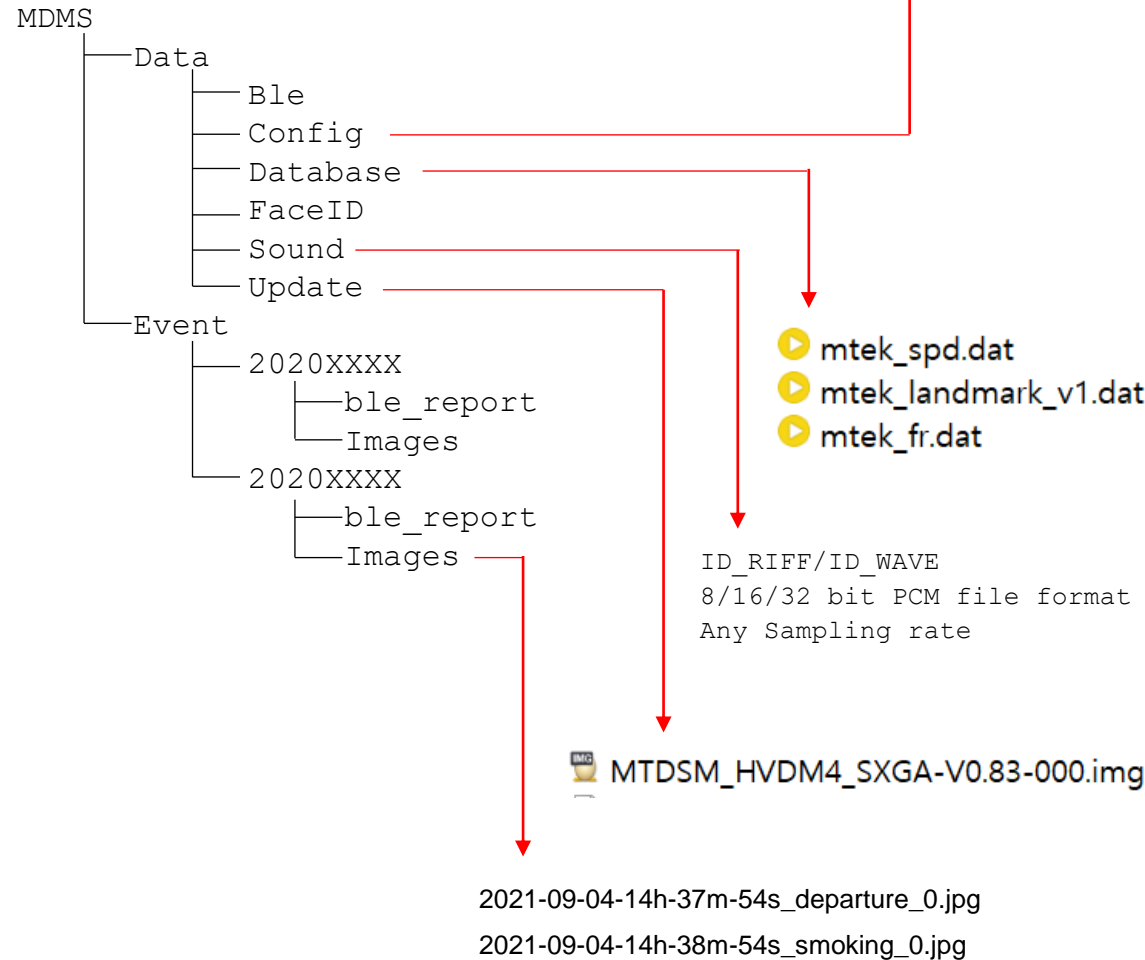
# Operational Flow/Folder Structure



## Operational Flow



## SD Card Folder Structure



Speaker Volume=2  
 Time zone=21  
 Test\_Mode=0  
 Unknown=1  
 NotSee=1  
 RGBLed=1  
 ExtSPD=0  
 Smoking=1  
 Calling=1  
 Yawning=1  
 FaceID=0  
 JPGSave=2  
 JPGCaption=1  
 DrvSPD=30  
 DrvHSPD=100  
 Drowsy SA Speed=20  
 Drowsy GPS Mode=1  
 Drowsy SEN1=2500  
 Drowsy SEN2=1500  
 Drowsy SEN3=1000  
 Distract SA Speed=20  
 Distract GPS Mode=1  
 Distract SEN1=5000  
 Distract SEN2=4000  
 Distract SEN3=3000  
 Depar SA Speed=20  
 Depar GPS Mode=4  
 Depar SA Repeat=1  
 Depar SEN1=60000  
 Depar SEN2=60000  
 Depar SEN3=60000  
 SMK SA Speed=0  
 SMK GPS Mode=1  
 SMK SEN=10  
 CALL SA Speed=10  
 CALL GPS Mode=1  
 CALL SEN=10  
 Yawn SA Speed=10  
 Yawn GPS Mode=1  
 Yawn SEN=10  
 Yawn Ratio=38  
 Sensitivity=2  
 CameraFlip Mode=0  
 Custom Scenario=0  
 CVBS Mode=1

# Shipping Package

**kaza** 15  
YEAR

**AUTHORIZED  
DISTRIBUTOR**

**VUE**MATE



## SE3



Main Unit



Multi I/O Cable

2.5mm  
Stereo Jack  
to RCA  
plug



Extension  
Bracket

Torx  
L-Wrench

Bolt & Nut for  
Extension Bracket

16GB  
MicroSD card  
(including  
adapter)



User Manual



Plate for Dashboard

## Options



GPS Mouse (Option)



Vibrating Seat Cushion  
(Option)



Cable Harness (Trigger Level  
Converter/UART Converter/  
Buried Power Cables)

## SE1



Main Unit



Cradle Bracket



16GB  
MicroSD Card  
(Incl. Adapter)



Cigarette Lighter  
Power Cable



User Manual