smart**carro**

BEYOND SMART

SE1

USER'S MANUAL

Driver State Monitor
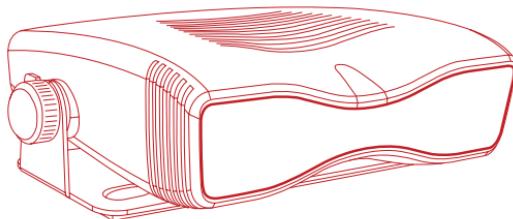
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BEYOND SMART

CONTENTS

Important safety information

■ This product is an assist device that detects a driver falling asleep or taking his eyes off the road while at the steering wheel and issues a warning to reduce accidents that may occur as a result of the negligence of the driver.

■ When the product is wet, do not place it on top of a heating device(e.g. heater or microwave) to dry it. (Doing so may cause an explosion or break down. Any breakdown of the product caused by not heeding this advice shall not be eligible for free after-sales repairs.)

■ Do not use chemical substances (e.g. benzene, thinner or alcohol) or deter gent to clean the product. (Doing so may cause a fire. Any breakdown of the product caused by not heeding this advice shall not be eligible for free after -sales repairs.)

■ Do not disassemble or apply shock to the product without the guidance of a specialist. (Doing so may cause a breakdown of the product. Any breakdown of the product caused by not heeding this advice shall not be eligible for free after-sales repairs.)

■ Do not install or manipulate the product during its operation. (Doing so may cause an accident. If installation or manipulation is necessary, park the vehicle in a safe place before the installation or manipulation.)

■ The recognition rate of the product may vary according to the surroun ding environment, the environment inside the vehicle and the habits of the driver.

■ Abide by the user manual for installation and usage of the product.

■ Illustration provided in this manual may vary in color from the actual product depending on the quality of the printout.

■ The product and its user manual may be revised without prior notice for improved features.

■ Always use the accessories officially provided by the company with the product. (Using accessories or cables unauthorized by the company on the product may cause an explosion.)

In the box
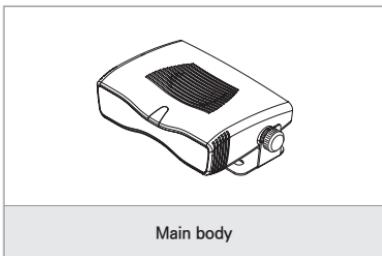
Main body	
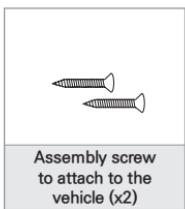
|		
Assembly screw to attach to the vehicle (x2)	**Power cable**	**User manual**
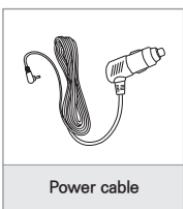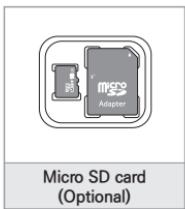
|	
Micro SD card (Optional)	**GPS (Optional)**
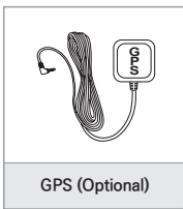
※ Please check that there are no missing components.

※ Components may be changed without prior notice for improved quality or features of the product.

At a glance
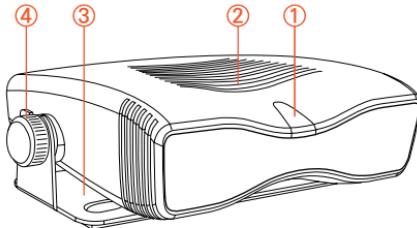
[Front side]
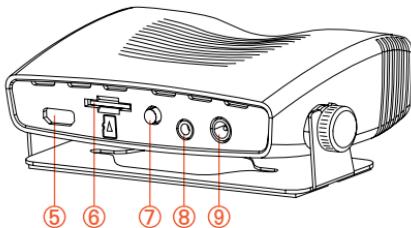
[Back side]

| No.	Labeling
①	Status LED (RGB)
②	Speaker hole
③	Cradle bracket
④	Bolt to adjust and fix the angle
⑤	MicroUSB (UVC)
⑥	Micro SD card slot
⑦	Switch to adjust volume and sensitivity
⑧	GPS port
⑨	Power port

Installation

Caution required when installing the product

■ If possible, install the product while on a flat surface. Make sure the engine of the vehicle is turned off during installation.

■ Make sure the product is not installed in a location that blocks the view of the driver.

■ Install the product away from a location where the air bag is installed.

■ Make sure the movement of the steering wheel is not obstructed by the product installed.

Selection of the installation location

■ Select the location of installation by referencing the image below.

■ Install the product slightly lower than the point where the gaze of the driver lands when facing forward.

■ Adjust the product so that the location of the face of the driver is level (i.e. both eyes)

▲ Operation distance
60cm~80cm
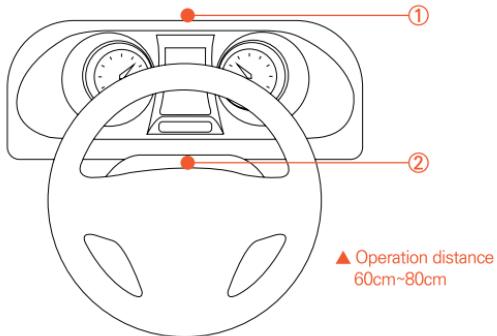
No.	Recommended location
①	On top of the dashboard (recommended)
②	On top of the steering column cover

Installation (cradle bracket)

How to install the product

■ Remove the front plastic cover.

■ Remove any foreign materials from the surface of the selected location.

■ Use the double-sided tape on the bottom of the holding dock to attach it to the location where you wish to install the product. Make sure the tape is attached firmly. (The product may move with long-term use of the product or the vibration coming from the vehicle. In such a case, the detection of movement may be undermined.)

■ For firm attachment of the product, use the bolt to attach the product onto the chosen location such as the dashboard of the vehicle.

■ Adjust the camera lens so that it faces the eyes.

■ Once the adjustment of location is complete, use the allen wrench to fasten the bolt for angle adjustment.

■ Connect SE1 power cable and GPS.

(1)

(2)
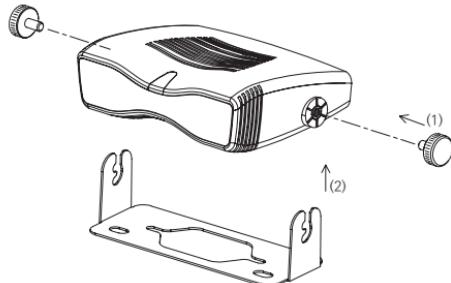
※ Lightly assemble the number 1 bolt on both sides, then assemble the number 2

Main body and cradle bracket

Product Features

About the product

- High-functioning ARM CPU
- CMOS image sensor
- USB 2.0 / UART interface
- Circuits to protect from overvoltage/ overcurrent/ reverse voltage and minimization of noise
- Algorithm for tracking and detection of the face and pupils
- Certification acquried

Main features

- If the driver falls asleep during driving or takes his eyes off the street, it is immediately detected and triggers an alarm.
- An Infrared ray LED is applied to allow for detection during night time and in dark places such as inside a tunnel
- A special filter is built in to remove scattered reflection caused by sunlight.
- Glasses or sunglasses are detected.
- A three-color LED is applied to display the operation status (green/ blue/ red)
- Micro speaker is applied to issue warnings
- Compatible with all automobile models (DC 12/24V)
- A dedicated holding dock makes it easy to install
- Sound volume can be muted or adjusted in four levels.
- Sensitivity can be adjusted in three levels.
- Comparible with vibrating cusions (sold separately)
- Firmware can be updated through the SD card.
- All events and scenarios, as well as images, including drowsiness of the driver or eyes taken off the road can be saved on the SD card.
- Can be synchronized with mobile apps, thanks to the application of BLE

Function description

Range of facial recognition

yaw

roll   pitch

Range of facial recognition

Not looking
forward

30°

30°

Eyes are on the road
(normal driving)

Not looking
forward

Function description

Not looking forward

Eyes are on the road (normal driving)

Not looking forward

15° 15°

Not looking forward

Eyes are on the road (normal driving)

30°

30°

Not looking forward
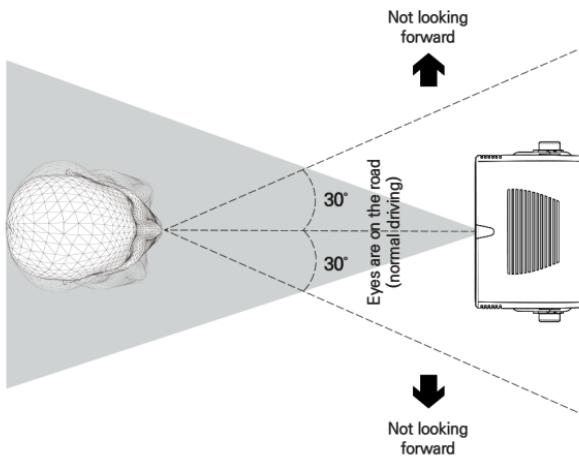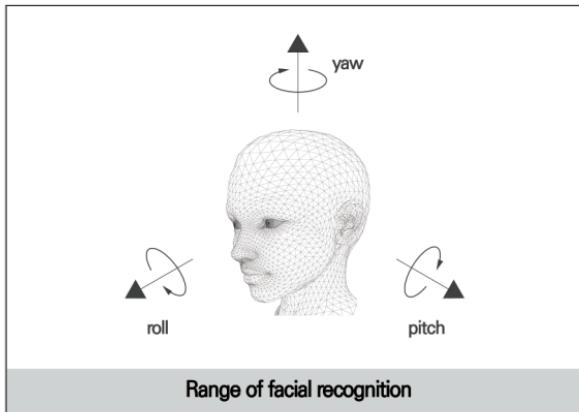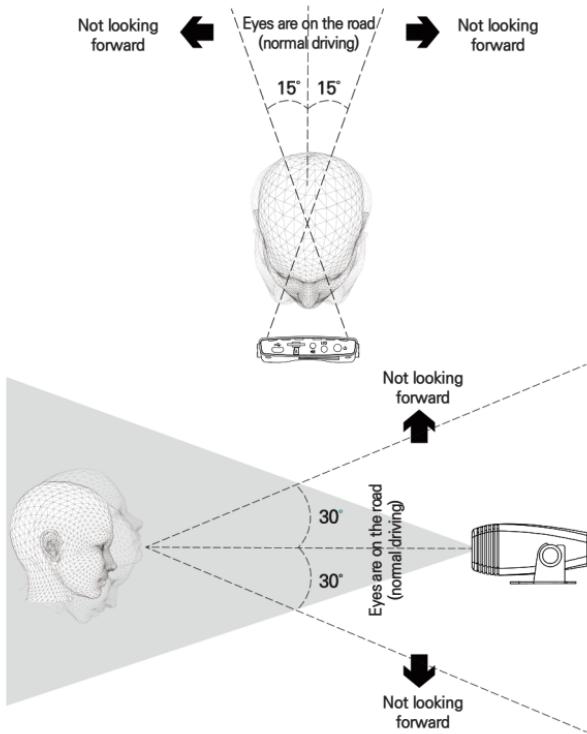
■ Depending on where the product is installed, it may not operate properly.

■ If the driver is wearing sunglasses or regular glasses that have special coating on the lens, detection may be undermined.

■ If there are hair strands that block the eyes, detection may be undermined. If it is before or after sunset/ sunrise, and depending on the light coming from the sides or outside, detection rate may vary.

■ A warning may be issued if the camera deems the driver's eyes to be closed. (E.g. if the gaze is downward, if the eyes are squinted or if the eyes become smaller due to laughing.)

Function description

Operational status	Content	LED display	Warning alarm or sound effect
1. Power on / booting	Reset and booting after connecting to a power source	R▶G▶B are displayed in order, after which G is switched off	parapara pam
2. Status of the front side	The face is recognized as heading the front when it is within a range of 30 degrees to the top, bottom, left and right	Once recognized, the green LED lights up	–
3. 1st detection of drowsiness	If both eyes are closed for one second or longer while facing the front, this is detected as a first sign of drowsiness	The red LED lights up	beep~
4. 2nd detection of drowsiness	If a state of drowsiness continues for an additional one second following the alarm sounded for 1st sign of drowsiness	The red LED lights up	Siren 1, Siren 2, Whistle (randomly played continuously)
5. Not looking forward	If the eyes are at an angle of 30~60 degrees for 2.5 seconds or longer, it is deemed that eyes are off the road	The red LED lights up	Ding ding
6. No face detected	When the face is not heading the front or within the range of 30~60 degrees.	The red LED lights blinks (at an interval of 2 seconds)	Ding ding
7. Smoking	If smoking gestures are continued for 0.5 seconds or longer while the face is headed towards the front	The red LED lights up	Beep beep beep
8. Use of mobile phone	If gestures of phone calls continue for 5 seconds or longer while the phone is held and the face is headed towards the front	The red LED lights up	Beep beep beep
9. Yawning	If the driver yawns while facing forward, it is detected	The red LED lights up	beep~
10. Power off	The power cable has disconnected or the car's engine has been turned off	–	–

※ The LED or alarm may vary depending on the version of the firmware provided

Function description

About the buttons and GPS-related features

■ Switch to adjust volume and sensitivity

- Volume can be adjusted by pressing the switch for a short duration (Sound can be muted or adjusted to levels 1 to 4).

- Sensitivity can be adjusted by pressing the switch for a longer duration(Level 1 (low) / Level 2 (standard) / Level 3 (high)/ Default setting is Level 2.)

■ Alarm

- GPS signals are picked up, leading to some warning alarms not being triggered when the car is stopped.
- Alarms may not sound if the volume is set to 'mute'
- In areas where GPS signals are not received, no speed can be picked up, resulting in the alarms not being sounded.
- We recommend that the device be connected to GPS to make use of the full functions. (If the device is not connected to GPS, alarms may not sound.)

Switch to adjust volume and sensitivity

GPS port

Back of the main body
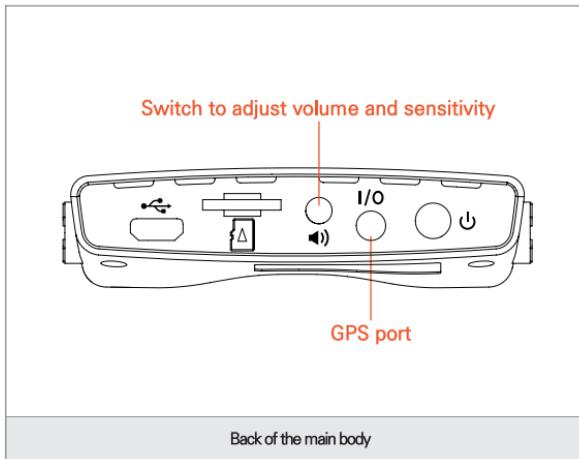
Trouble shooting

Symptom	Action to be taken
The LED that shows the operational status does not light up or does not change color.	If the LED that shows the operational status does not light up after connecting to a power source, please contact our after-sales services team.
	This indicates that after being connected to power, the LED continues to blink in red and the camera is unable to identify the eyes. Adjust the installation location. If there are still no changes, please contact our after-sales services team.
	If the LED that shows the operational status is erratic, check again whether the product has been installed properly. If there are still no changes, please contact our after-sales services team.
I cannot hear the warning sound from the speaker.	Press the switch for volume adjustment on the back of the product to check that the sound has not been muted. If there are still no changes, please contact our after-sales services team.

Product specifications

Category	Details	
Dimensions (W x D X H / excluding the holding dock)	74.8 x 53.0 x 23.8mm	
Weight	80g	
Color	Black	
Alarm	Speaker	O
	LED	Red (R), Green (G), Blue (B)
Storage device (firmware update / events saving)	Micro SD Card(Option)	
Input voltage	12/24V	
Function	Drowsiness / Not looking forward / No face detected / Smoking / Use of mobile phone / Yawning	
Recognition distance (Camera (→) driver)	60cm ~ 80cm	
Installation location	Dashboard or steering column cover	
Temperature range for product operation	-20 ~ +60℃	
Power consumption	MAX 4W	

* Power source: Use a PS2 or less than 100 W power

PRODUCT WARRANTY

1. This product went through strict quality control and examination process.
2. Warranty Period
● Device: 1 years (If purchase date is unidentifiable, 15 months from the manufacture date)
● Accessories (Consumable): 6 months, Micro SD Card: 6 months
● Period during which after-sale repair parts will be available: 5 years following the suspension of the sale of the model
3. When requiring major defection within 10 days of purchase: exchange or free repair
4. Within the Warranty Period: Free Repair
5. After the Warranty Period: Paid Repair
● Free repair is limited to damage due to performance and functional defects under normal usage circumstances within the warranty period.
● What is not indicated is enforced according to Fair Trade Commission Notification on Consumer Dispute Solution Standard.
● There will be a charge in the following cases even within the warranty period.
   - Damage due to natural disasters (fire, lightning, storm and flood, etc.)
   - Damage due to inattention when using (dropping, flooding, impact, breakage, unreasonable movement)
   - Damage due to abnormality in power or defect in connecting device
   - When the product was altered without permission or repair was done outside the official service center
   - When the warranty is lost or has no stamp of the purchased store, or the content is altered

Product Name		Model No.	
Product No.			
Customer	Name		Phone No.	
	Address			
Sales Shop	Name of Shop		Phone No.	
	Address			
	Purchase Date		Purchaser	(signature)

※ When abnormality occurs while using the product, please check the user manual again before contacting the customer center.

1) FCC Compliance Statement
This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions:
(1) This device may not cause harmful interference, and
(2) This device must accept any interference received, including interference that may cause undesired operation.

2) FCC Interference Statement
This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to correct the interference by one of the following measures:
Reorient or relocate the receiving antenna.
Increase the separation between the equipment and receiver.
Connect the equipment into an outlet on a circuit different from which the receiver is connected.
Consult the dealer or an experienced radio/TV technician for help.

3) FCC Caution
Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

4) FCC Radiation Exposure Statement
This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator and your body. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

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