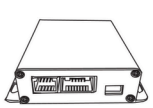
VIRTUS
FLEET

DVS 2024 AI Camera

System Installation Manual

CE / E-mark E24 / UKCA

Package Content



ECU×1

BSIS Camera×2

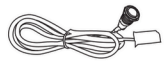
MOIS Camera×1

LED DISPLAY×1

External speaker×1

A pillar Led×1

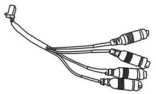
GPS module With gravity sensor×1



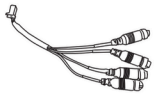
Mute switch×1

Power harness×1

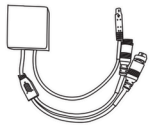
Display Cable×1



Video input×1



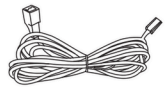
Video output×1



Wifi calibration Module ×1

Wifi calibration module is not included in every kit, it can be used for many times

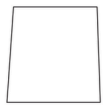
3m Camera Extension cable×3



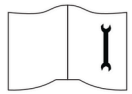
2.7m display extension cable×1

Bracket for led display×1

Alarm extension cable×1



3m tape×1

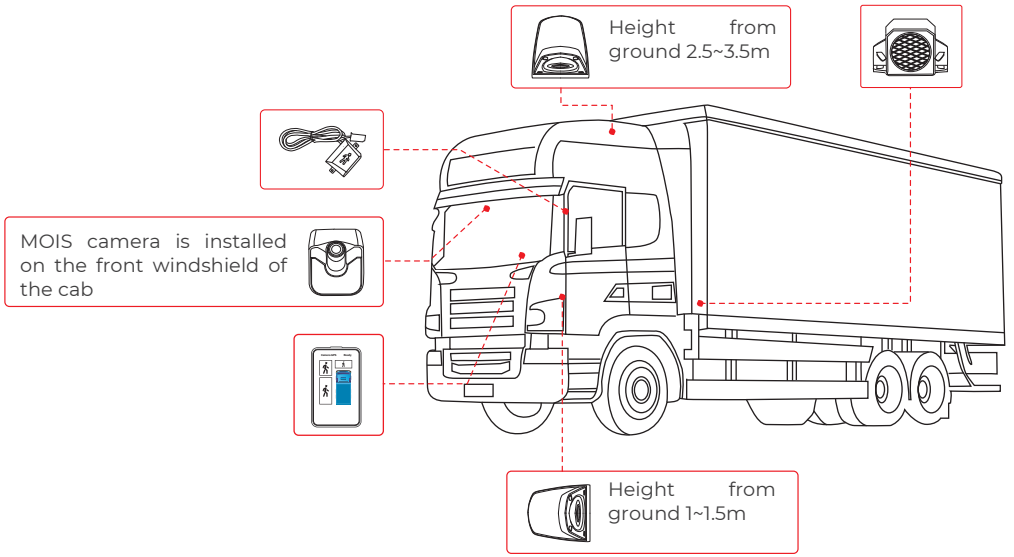


Installation Guide×1

AI camera Specification

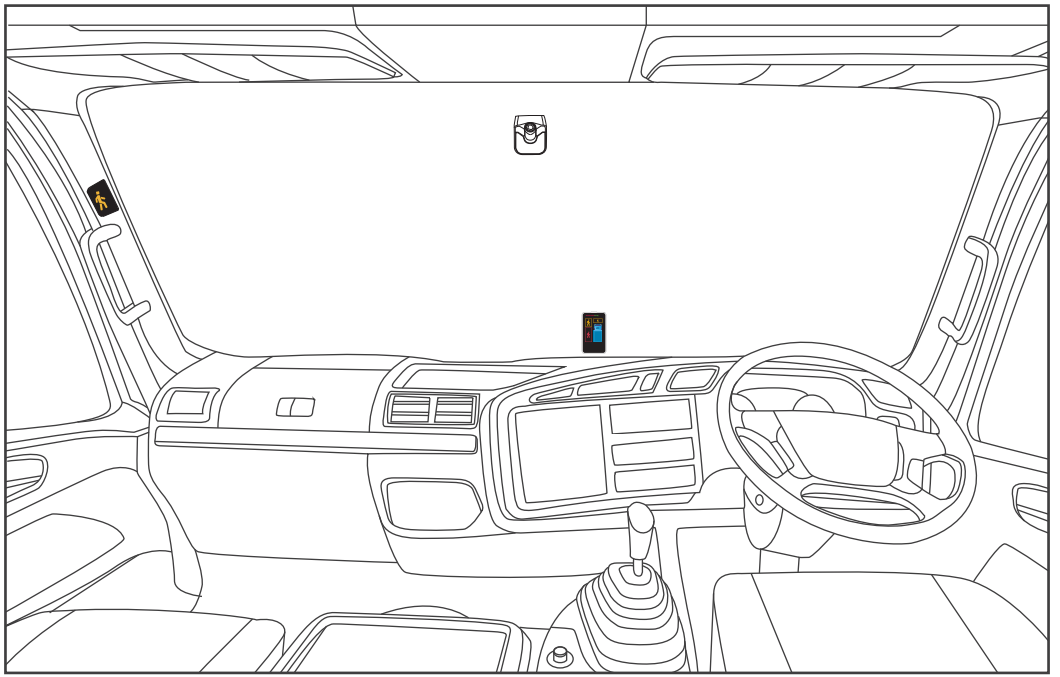
Operation Voltage:	12~16V
Operation Current:	<150mA
Operation Temperature:	-20 ~ +70 degrees
Storage Temperauture:	-30~ +80 degrees
Camera fov:	Forward-facing camera : 150 degree BSIS near side camera : 150 degree BSIS rear view camera
Resolution:	: 150 degree 1080P 30pfs
Detection Range:	Front 2 meters (L) * 3 meters (W) Side 9 meters (L) * 2.2 meters (W)
Video Output:	Mirror and flip 720P/1080P
Upgrade Function:	Via APP
Self-checking Function:	Blocked, dirty, poor connection

System Layout

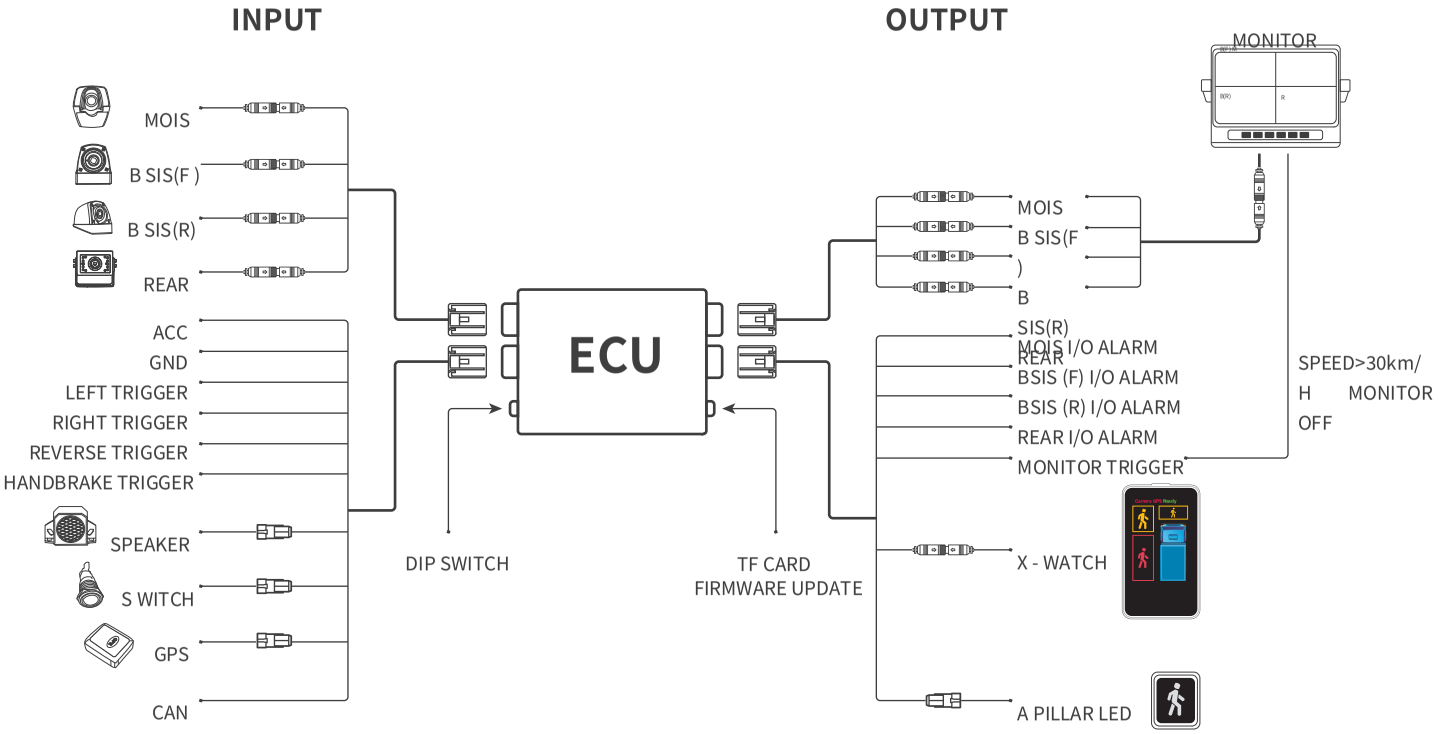


External Alarm Specification

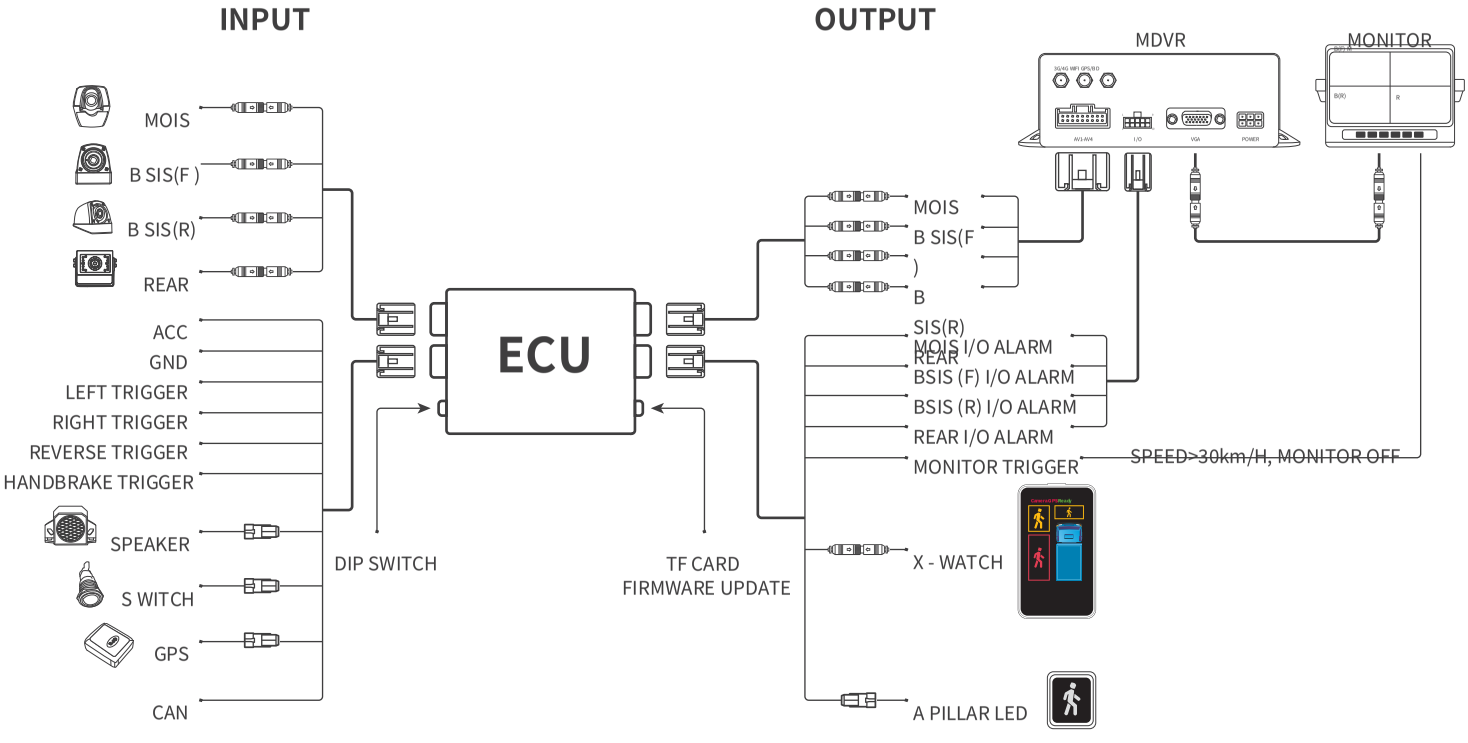
Rated Voltage:	DC 12 / 24V
Operation Voltage:	12 ~ 36V
Operation Current:	< 500mA@24V
Operation Temperature:	-40 ~ +85℃
Storage Temperature:	-40 ~ +85℃
Sound Frequency:	500Hz ~ 7KHz
Duty Cycle:	3.0S/T(Vocal Reverse Warning) 3.3S/T(Vocal Left Turn Warning) 33S/T(Vocal Right Turn Warning)
Waterproof IP Rating:	IP69
Volume:	80-85 dB at 1m
Function:	With On/Off switch and mute function, mute time: at 23:30pm and 07:00am



Monitor Combined System Wiring



Mdvr Combined System Wiring



Camera installation

1. MOIS Camera :

a) Ensure the camera's view angle covers the bottom of the front windshield and covers as far forward as possible.

b) Avoid any shadows or reflections.

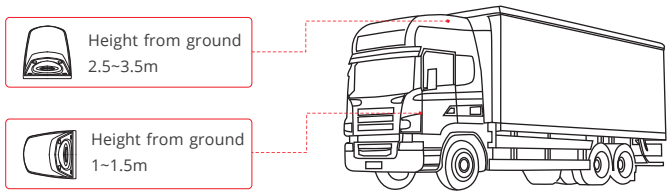
c) The camera should be in the middle and within the wiper range.

2. BSIS Camera:

a) The wide angle camera should be mounted 2.5m to 3.5m from the ground and the long-focus lens camera should be mounted 1m to 1.5m from the ground. Both cameras need to installed on the nearside of the vehicle.

b) The wide angle camera should be mounted with the lens facing down vertically. The long-focus lens camera should be mounted with the lens facing backwards and slightly downwards.

c) Adjust the camera angle until the edge of the vehicle can just be seen.



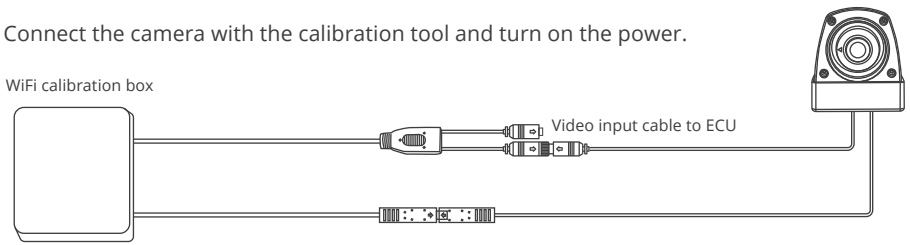
3. Calibration:

Adjust the camera with the image on the monitor, until the calibration line which is close to the nearside overlaps with or slightly cover the vehicle body.

Ai Camera Calibration

①

Connect the camera with the calibration tool and turn on the power.



② Connect WiFi signal, WiFi signal name: ai camera calibration.

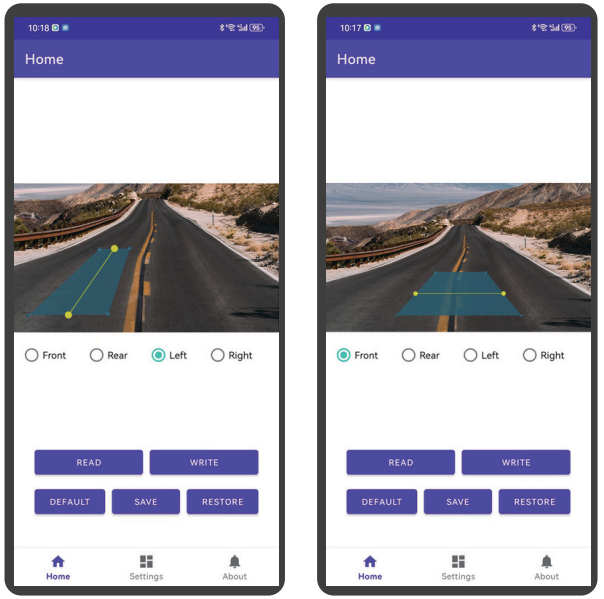
③ Select the right camera to be calibrated: front, back, left, right.

④ Mark the alarm area on the ground（we can use the traffic cone to set the detection zone).

⑤ Move the ruler line on the mobile app to coincide with the ground marking.

⑥ After clicking WRITE ,check whether the ruler line on the test monitor is consistent with the position on the application app.

⑦ If consistent, the calibration is completed.

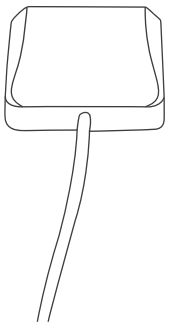


Installation of Inertial Navigation GPS

1.Installed on the surface of the vehicle dashboard, the surface should be flat, and the GPS module should be tightly fitted.

2.There should be no metal obstructions above the GPS.

3.Avoid bending the cable, as shown in the figure:



Noticed: To ensure the gyro works properly once the vehicle is started, the vehicle must stop for six seconds before moving on.

AI camera working logic

Self Test

When the system detects the camera blocked by an object, damaged, or poor connection, or crash. The LED display will show the red camera character and give a voice alert to remind the driver which camera is malfunction.

After self check is complete, it says "SAFE SYSTEM READY" if there are no faults. If there are faults it does not say this. Each time system starts, self check function starts. Checks GPS/Gyro and each connected camera. For each problem it plays the message twice. Then does not play any faulty messages again until next time system starts.

GPS MALFUNCTION

MOIS CAMERA MALFUNCTION
BSIS(FRONT) CAMERA MALFUNCTION
BSIS(REAR) CAMERA MALFUNCTION
REAR CAMERA MALFUNCTION

Handbrake function

When handbrake is on, it gives 12-24V output, Speaker on the led display is muted when a VRU is detected When handbrake is off, it gives Ov or GND output, speaker on the led display generates audio alarm when a VRU is detected.

When handbrake is on, shows yellow pedestrain icon, no sound.

When handbrake is off, shows red pedestrian icon and sound.

System Working Condition

MOIS works from 0.1-5km/h. BSIS works from 0.1-30km/h. MOIS stops alarm above 5km/h. BSIS stops alarm above 30km/h. Both led display and A pillar indicator show like the picture.

Led Display

A Pillar LED Indicator

BSIS Working Method

①If there is no VRU detected by left AI camera, there will be no visual and audio alarm.

②When a VRU is detected within 1m to 2.2m vertical distance from the nearside, the display shows a yellow icon in the corresponding position, and left A-Pillar led indicator shows a yellow icon warning, and no audio warning.

③When a VRU is detected within 1.1m to 2.2m vertical distance from the nearside, left turn signal is not used. Only use GYRO to detect left turning. No audio alert when VRU is within 1.1m To 2.2m, just yellow icon, the display shows a yellow icon in the corresponding position, and left A-Pillar led indicator gives a yellow flashing.

PEDESTRAIN LEFT

④When a VRU is detected within 1m vertical distance from the nearside, led display shows a red icon and a pillar led indicator shows a red warning.

⑤When a VRU is detected within 1.1m vertical distance from the nearside, left turn signal is not used. Only use GYRO to detect left turning. The led display shows a redicon and audio warning, A pillar LED gives a red flashing warning .

PEDESTRAIN LEFT

MOIS Working Method

System Working Condition

The MOIS camera gives the alarm when speed is 0~5km/h, the MOIS camera still working but not gives the alarm when speed is > 5km/h.

①When no VRU are detected in front, led display shows like picture.

②Speed at Okm/h, when VRU are detected in front of the vehicle, the display shows a yellow icon and no audio warning.

③ Speed at 0<speed≤5km/h, when VRU are detected in front of the vehicle, the display shows a red icon and gives audio warning.

System Trouble-Shooting

Problem	Solution
Inertial navigation cannot locate	a) The inertial navigation GPS module should be installed in a flat position on the vehicle dashboard, with a flat surface and the line facing straight back, without metal obstruction b) For the first time, after starting the engine, the car should be stationary for 10 seconds before starting c) Complete the calibration of the gyroscope after driving for about 3 minutes d) Check for poor connections or loose plugs in the wiring -cable connection
AI camera malfunction	a) Check for poor connections in the wiring b) Power on again c) Connect the monitor to check if the image display is normal
False alarm Missed alarm	a) Clean the stains on the surface of the lens, and the front camera head also c) Needs to clean the stains on the windshield b) When installing the front camera, avoid the reflection and shadow of the windshield glass d) The installation and fixation of the camera should be firm to avoid misalignment of the calibration area caused by loose installation after calibration. The image cannot be tilted
External speakers cannot automatically mute at night or at high speeds	a) GPS damage b) GPS no positioning
Display Malfunction	a) No display: i. Check if the ECU power supply is normal Ii. Check cable connection between the display and ECU
	b) No sound i. Is the vehicle stationary Ii. Is the indicator activated

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