# 12.3 inch Electronic rearview mirror system

# User Manual

# 1. Product description

The electronic rear-view mirror system is used to monitor the actual road conditions of the left and right front and rear of the vehicle, overcome the blind area existing in the traditional optical rear-view mirror, with wide dynamic, strong light suppression, ultra-low illumination and fog penetration algorithm. The camera surface adopts toughened water slipped glass and has intelligent heating function to solve the problem of frosting in cold areas.

# 2. Specification

## 2.1 Monitor TF1232

| **Model** | **TF1232-02AHD-B** |
|---|---|
| Screen | TFT-LCD |
| Screen Size | 12.3 inch （8 : 3） IPS |
| Pixel | 1920X3（RGB）X 720 Pixel |
| Screen backlight | LED |
| Brightness | 750cd/m2 |
| Contrast ratio | 1000:1 |
| Active Area | 292.32 (H) X 109.62 (V) [mm] |
| View Angle | U/D/L/R 85/85/85/85 |
| Brightness automatically | CDS induction Brightness automatically function |
| Signal interface | 4PIN Avaition （1、+12V 2、GND 3、NC 4、VIDEO） |
| Video starnard | AHD 720P/1080P /CVBS PAL&NTSC/AUTO |
| Language menu | Languages: Chinese /English |
| Operating | Remote control |
| Working Temperature | - 30 ～ 70 ℃ |
| Storage Temperature | - 40～ 90 ℃ |
| Dimension | 343mm*160mm*31.5mm /343mm*160mm*67.5mm(with bracket） |
| Net weight | 1.035KG |
| AHD1（CAM1） | AHD 720P /1080P /CVBS |

| | |
|---|---|
| AHD2（CAM2） | AHD 720P /1080P/CVBS |
| Power | Power Input DC +10~32V |
| Consumption | MAX: 25W |

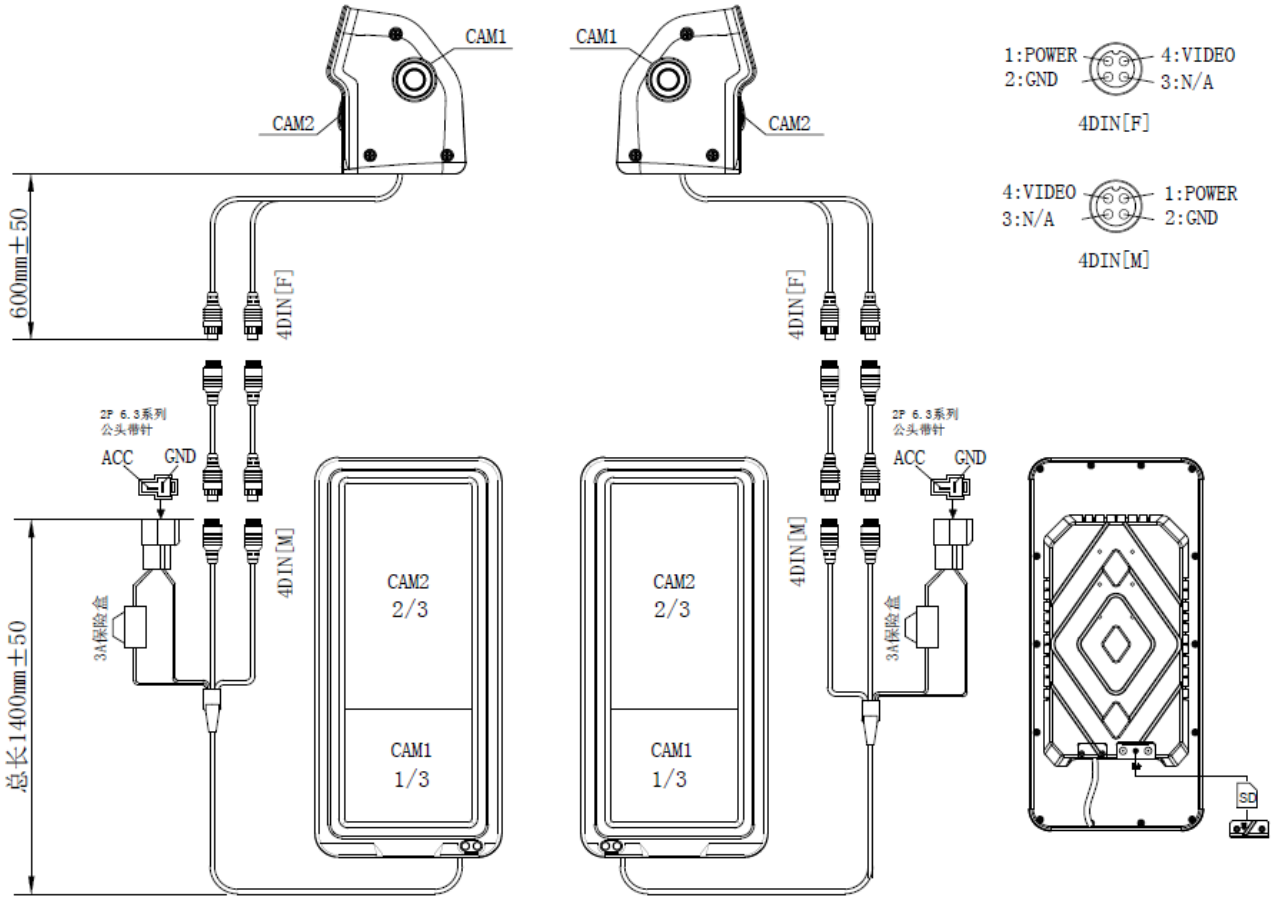
## 2.2 Camera MSV20

| Model | MSV20-13JM-158-M&13JM-36-M | |
|---|---|---|
| Image sensor | Sony 1/3.2” | Sony 1/3.2” |
| Signal System | PAL/NTSC | PAL/NTSC |
| Pixe | 1280 (H) x 960 (V) | 1280 (H) x 960 (V) |
| Sensitivity | 0 Lux (IR light on) | 0 Lux (IR light on) |
| scanning system | Progressive scan RGB CMOS | Progressive scan RGB CMOS |
| Sync | inter-sync | inter-sync |
| SNR | Over 46dB (AGC off) | Over 46dB (AGC off) |
| AGC | Automatic | Automatic |
| Electronic Shutter | Automatic | Automatic |
| BLC | Automatic | Automatic |
| IR | 850nm | 850nm |
| IR light | Optional | Optional |
| Video Port | 1 Vp-p, 75Ω,AHD | 1 Vp-p, 75Ω,AHD |
| Audio | No | No |
| Mirror image | Support | Support |
| Switcher | No | No |
| DNR | -30° C ~ +70 ° C | 3D |
| Dynamic range | 120 dB | 120 dB |
| Automatic induction heating | No | Automatic heating below 5℃ |
| Heating power | No | 5W （MAX） |
| Lens | f1.58mm Megapixel | f3.6mm Megapixel |

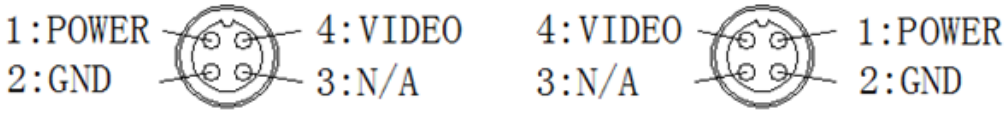
| Voltage | 12V DC±10% | 12V DC±10% |
|---|---|---|
| Electric current | 160mA(Max) | 430mA(Max) |
| Dimension | 144 x 88 x 119 mm | |
| Waterproof | IP67 | |
| Working Temperature | -30° C ~ +70 ° C | |

# 3. Connection

## 3.1 System configuration

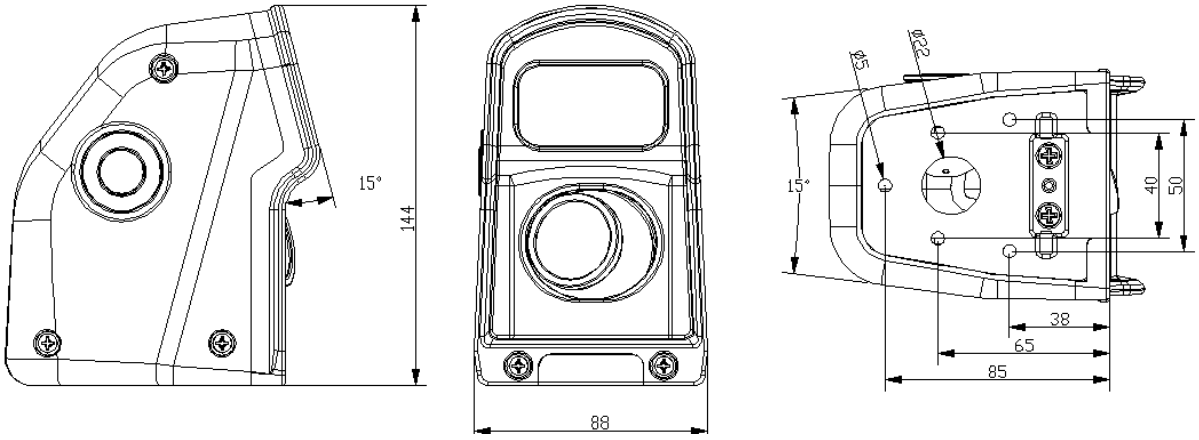



## 3.2 Electrical interface definition

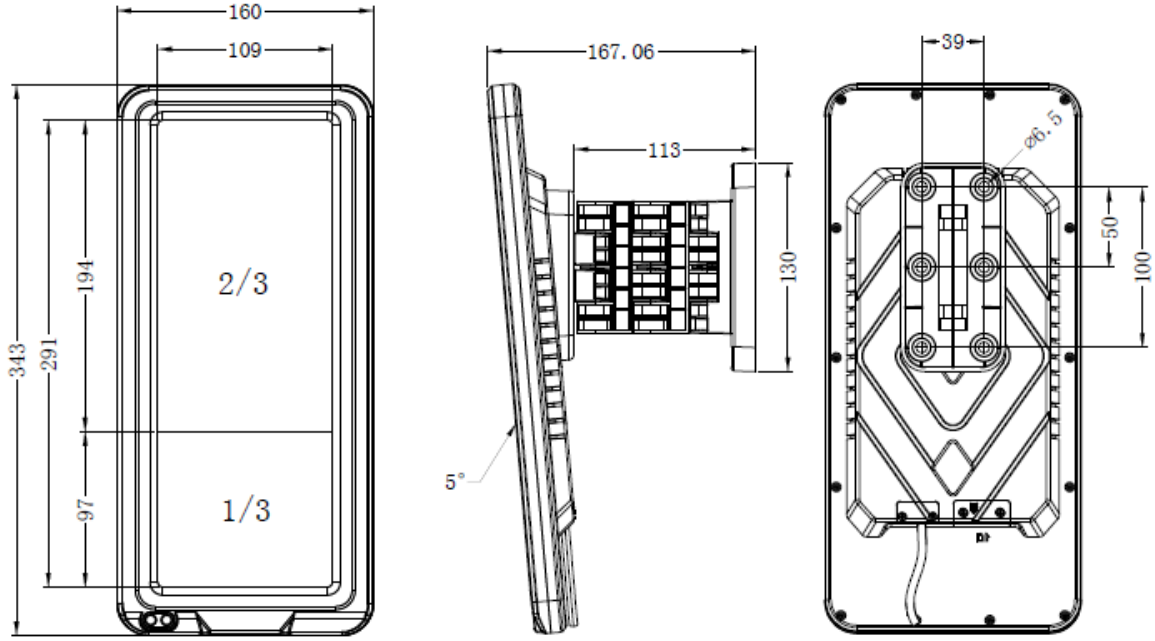


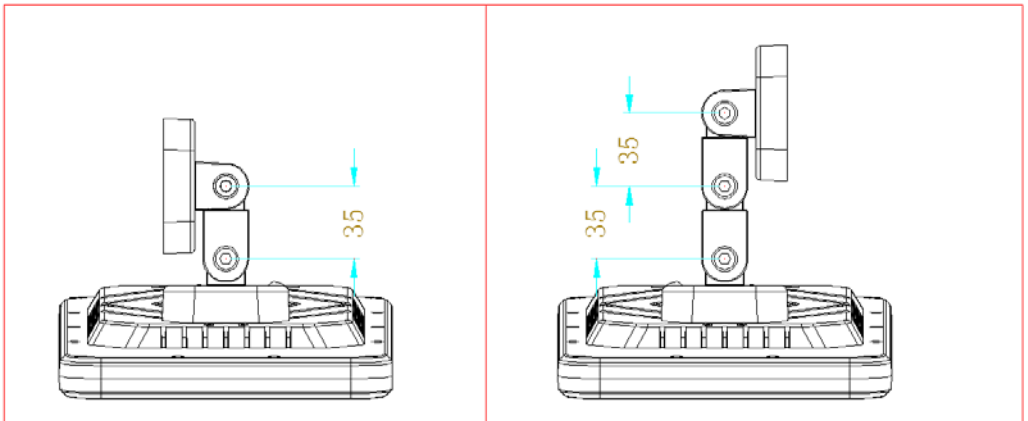

Female 4 PIN aviation connector  Male 4 PIN aviation connector

## 3.3 Camera size




## 3.4 Monitor size




TF123 A柱(驾驶位)安装尺寸图(链式支架)

TF123 B柱(副驾驶位)安装尺寸图(链式支架)

## 4. Main performance index and quality requirement

4.1 The product is designed according to the following related standards:

| No. | Standard/document number | Standard/document name | Note |
|---|---|---|---|
| 1 | GB2423.1-89 | Basic environmental test procedure for electrical and electronic products - low temperature test | Pass |
| 2 | GB2423.2-89 | Basic environmental test procedure for electrical and electronic products - high-temperature test | Pass |
| 3 | GB 2423.17-2018 | Basic environmental test procedure for electrical and electronic products -salt fog test | Pass |
| 4 | ISO16750-3 | Road vehicles - environmental conditions and tests for electronics and electronic equipment (vibration test in mechanical environment) | Pass |

### 4.2 Part list

| Material name | No. | Name | Model | Number | Notes |
|---|---|---|---|---|---|
| Electronic rearview mirror system | 1 | 12.3 inch monitor | TF1232 | 2 | Includes installation accessories |
| | 2 | Camera (left) | MSV20 | 1 | |
| | 3 | Camera(right) | MSV20 | 1 | |
| | 4 | Extension cable 5 meters | E-CA-4DM4DF0500-B | 4 | Cable length can be customized |

| | | | | | |
|---|---|---|---|---|---|
| | 5 | Monitor bracket | / | 2 | |

# 5. Installation

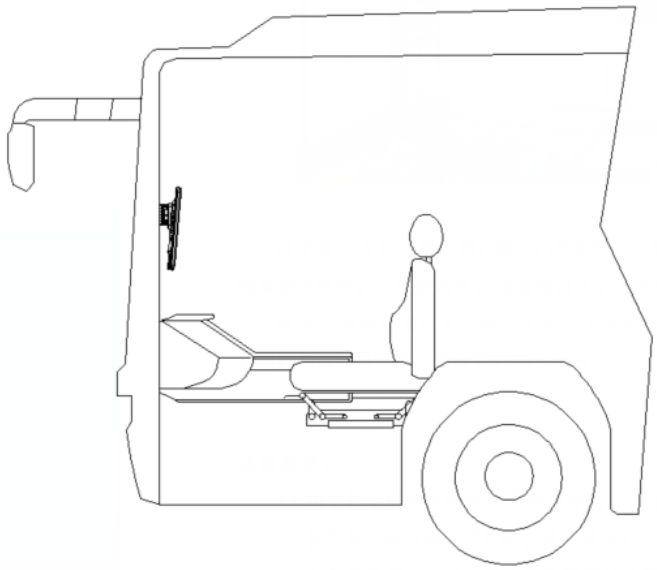
## 5.1 Monitor installation

The monitor is fixed on both sides of pillar A and B in the vehicle, Align the bottom of the left monitor with the bottom of the left mirror, The height of the monitor on the right side is the same as that on the left side or slightly raised (50-100mm). Keep the view level with the outside rearview mirror. as following picture shows:

1. If the A-pillar housing can be removed: after the installation height is set, stick the accessory sticker on the appropriate position proposed by the A-pillar, drill through the A-pillar with a 6.5mm diameter drill according to the hole position of the sticker, use the standard 6x30mm screw to pass through the bracket and the A-pillar fixing hole, on the back of the A-pillar, tighten with the anti loose meson and the M6 nut, and drip the screw glue. Finally, put the cap on the bracket screw hole plug. This is our push Recommended installation method.

2. If the A-pillar shell cannot be removed: after the installation height is set, stick the accessory sticker on the appropriate position of A-pillar, drill through A-pillar with a 4.5mm diameter drill according to the hole position of the sticker, use standard m6x30mm self tapping screw to pass through the bracket,

fix it on A-pillar, tighten it, drip screw glue between the bracket screw head and the counterbore, and finally put a cap on the bracket screw hole plug



**Notes：**

1）As the monitor wire harness needs to pass through the A-pillar, please pay attention to limit the wire harness in the design the wire install position to prevent damage to the wire harness when drilling holes in the monitor installation process;

2）When installing the right monitor, please avoid the position of the door shaft, and the monitor body will not interfere with the door shaft during rotation;右

3）Please note that when the left glass side rear-view mirror extends out of the front of the vehicle (it needs to be observed from the front windshield), when designing the monitor installation position, it is necessary to avoid the monitor from blocking the rear-view mirror after installation;

4）Please note that after the monitor is installed on the vehicle, the monitor shaft must be fixed, otherwise, the monitor will turn to the passenger door, and the passenger door will clamp the monitor when opening and closing the door.

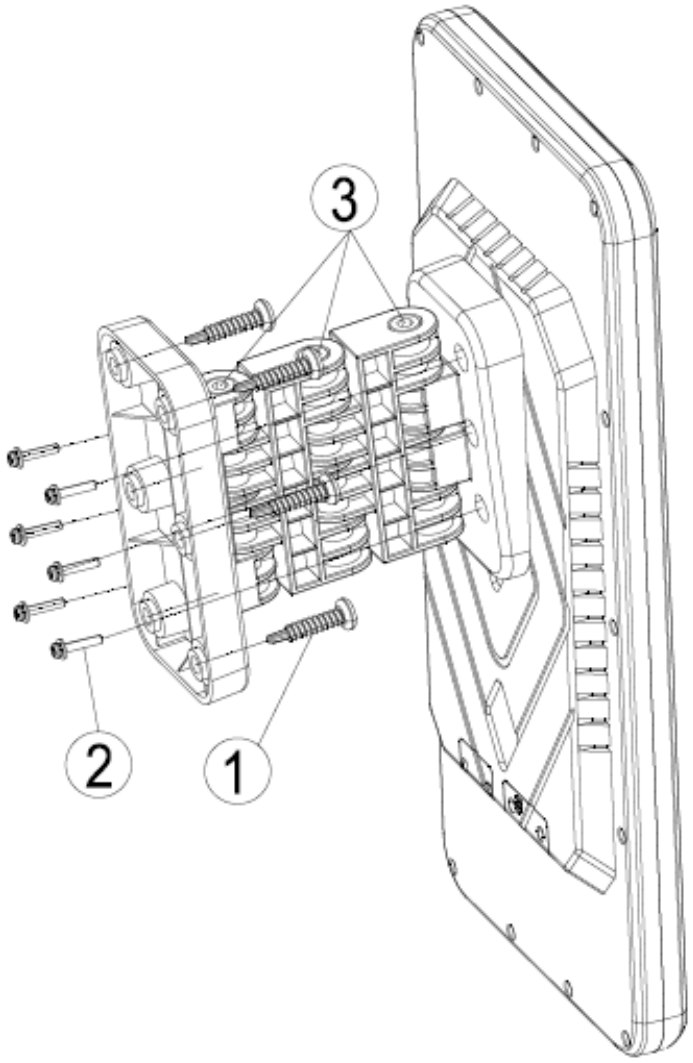
5）Installation direction of monitor: there is a light sensitive hole under the mointor (the monitor can automatically adjust the brightness of the screen according to the change of light brightness). It is necessary to ensure that the hole is under the monitor. The

wrong installation method may cause the display screen to fall off and damage.


**Fix minotor：**

1) Lock the bracket into the back housing of the monitor with screws (part 2)；
2) The another end of bracket is fixed to pillar A with screws (part 1)；
3) Adjust to the appropriate visible Angle and tighten the hexagon socket screw (part 3)
4) Monitor cable set: the power cable is embedded inside pillar A. The video cable is perforated in the base position near the power harness to avoid large area of exposed cable.

# Assembly drawing



## 5.2 Camera installation

**Notes：**

1）Installation position: due to different models, please pay attention to whether the camera's field of vision will be blocked by bulges. If there is a field of vision blocked, it is necessary to increase the height of the camera pad or move it;

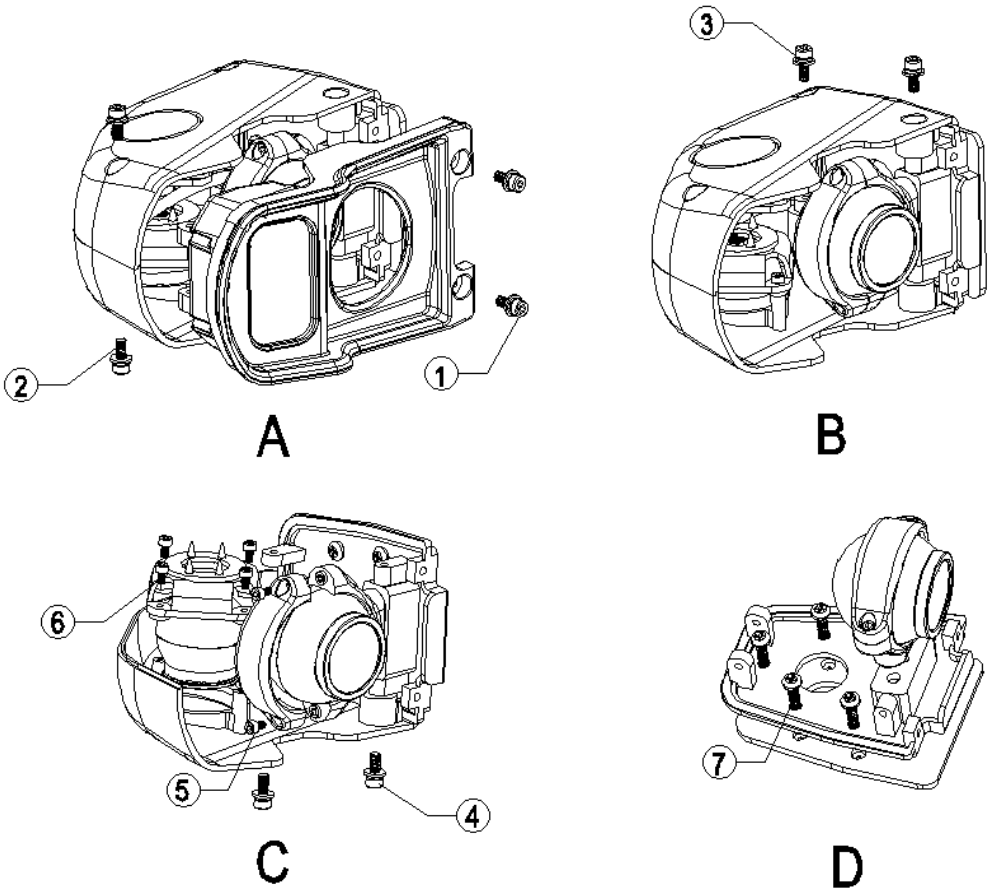
2）Drilling hole and install cable: the camera adopts waterproof aviation connector. Please try to avoid the connector passing through the square steel (not easy to thread cable). If it needs to pass through the square steel, it is necessary to check the size of the thread hole.

3）Preparation tools: M3 hexagon spoon

**Fix camera：**

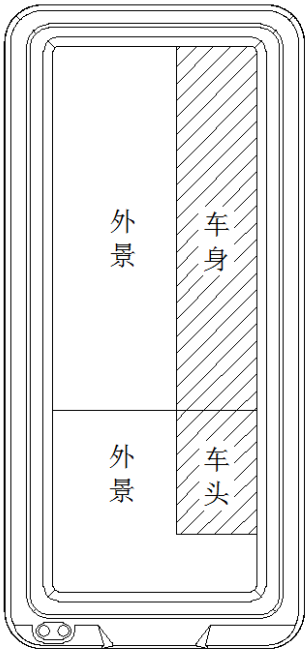
1) Drilling hole: the camera adopts 4-pin aviation connector, the maximum outer diameter of the harness is 16mm, the length of the injection connector is 40mm, the recommended hole size is not less than 18mm, better size is 20mm.
2) Installation: screw out ① ② ③ ④ screws, remove the upper and lower cover and front shell of the camera. There are 4 fixed holes on the base, and use self tapping screws to directly hit the vehicle body. Loosen ⑤ ⑥ screws, adjust the field of vision, then lock the screws, and then install the upper and lower front covers of the camera.
3) Sealing: it is recommended to seal the fixed part of the camera from the inside of the skin to prevent water from entering; the opening of the camera should also be sealed with waterproof glue to prevent water from entering the body.

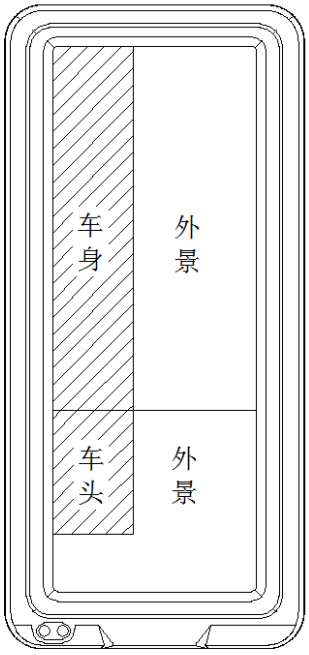
## Assembly drawing



**Adjust View：**

As shown in the recommended picture below, camera 1 and camera 2 images are connected up and down the vehicle body edge, accounting for 5 / 2 of the image. There is space in the front of the vehicle to see the blind area, the vehicle body and the exterior.



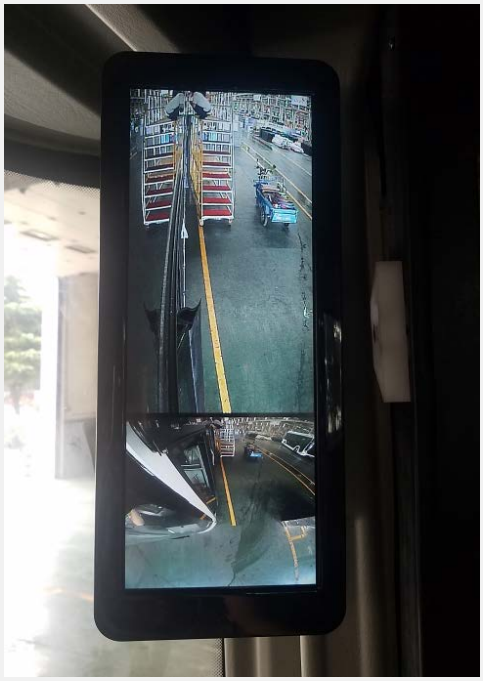




**The unsatisfactory debugging effect is shown below:：**

2、 There is too much field of view at the vehicle front. The field of view of cam1 / CAM2 is not parallel. One camera is black

1、 The front vision adjustment is too close to the front, the front blind area is not visible, the upper width is wide and the lower is narrow

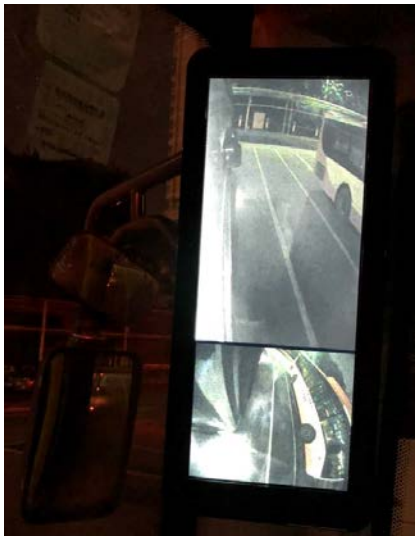
**The correct debugging effect is shown in the figure below：**



## 6. Installation effect：

Daytime

Daytime



**Night**

**Night**

Raining day

Raining day

# 7. Maintenance instructions

8.1 Monitor

A、 Wipe the dust on the surface regularly to avoid dust accumulation affecting the driver's vision; use a wet cloth to wipe gently to avoid the dry towel directly wiping hard to avoid scratches on the screen.

B、 After a long time of use, the screws of the shaft bracket may be loose, resulting in a change in the viewing angle of the monitor relative to the driver. After the field of view of the monitor is adjusted, remove the screw cap above the shaft bracket, and use the L-type hexagon wrench to tighten the shaft screws again.

8.2 Camera

A、Wipe the dust on the camera regularly to avoid the image blur caused by dust accumulation;

B、The camera can be washed by water, but it can not be directly sprayed by high-pressure water gun;

C、If the imaging field of vision on the display changes, loosen the camera screw, fine tune the internal ball, correct the imaging field of vision and then fix it again.