



User Manual

Safety Instructions

If you find some inconsistency in this manual during use, please consult the technical support department. The content will be updated over time to time without notice.

Installation Precautions

In order to ensure the normal operation of the equipment, to extend its service life, please ensure that it meets the specifications during installation.

- * The device should be installed horizontally, as far as possible from locations with high vibrations, where there is no interference from other electronic equipment, the ventilation is good, there is no shielding, covering, the machine and its accessories and peripherals should be installed in a position that is not easily accessible to passengers and drivers
- * Please pay attention to waterproof, moisture and lightning protection when installing the equipment;
- * Remember not to touch the power supply and the device with wet hands; do not spill liquid on the device to avoid short circuit or fire inside the machine;
- * This machine is compatible with 12V and 24V power supply, please pay attention to the positive and negative poles when wiring to avoid short circuit;
- * When connecting other external devices, please turn off the power of this machine. Do not plug and unplug while powered on;
- * It is strictly forbidden to move the machine or replace components with electricity, otherwise it will damage the equipment;
- * Do not place other equipment directly on this product upper part
- * Non-professionals are not allowed to disassemble the case by themselves to avoid damage and electric shock;



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One, Product Brief

1. Product description

The product is a full HD vehicles driving recorder with intelligent analysis system integrated, supporting the following functions: Driver status monitoring and warning (DMS), forward collision warning (forward ADAS), blind zone detection and warning (BSD), hands off the steering wheel (HOD), overcrowded aisle detection (OCD), support for GPS positioning, 4G network communication module, multi-channel video surveillance etc., can improve the driving safety of the driver.

It is equipped with a multi-channel AI analysis performance system, that allows it to be flexible and expand through software the stability, compatibility, maintainability and performance of the OS throughout its lifetime.

2. Product features

- * Full-featured active safety integrated machine
 - ✦ GPS positioning
 - ✦ Built-in LCD display and printer
 - ✦ Maximum support 8 channels 1080P HD audio and video input
- * Professional and powerful AI chip
 - ✦ 4-core A53 processor, 1.2TOPS NPU, Native SATA interface, 64-bit DDR4
 - ✦ It can also support DMS, ADAS, BSD, HOD, OCD and other algorithms, and has further algorithm scalability
- * Simple and stable hardware design
 - ✦ GPS optimized design, minimize circuit interference
 - ✦ Damping support structure for hard disk storage, vehicle shaking resistance and adapt to various road conditions
- * Professional and reliable system solutions
 - ✦ Built-in EMMC, support loop recording, dual backup for emergency recording
 - ✦ Built-in battery and optimized power supply design, guaranteed at the moment of external power failure
 - ✦ Roadend dedicated video file system, ensure the confidentiality and security of video data
- * Professional and reliable active safety
 - ✦ Support DMS, ADAS, BSD, HOD, OCD



- ✧ Deep learning technology: accurate target recognition and fast iteration update
- ✧ Support the latest neural network in the industry

3. Appearance description

3.1. Host view

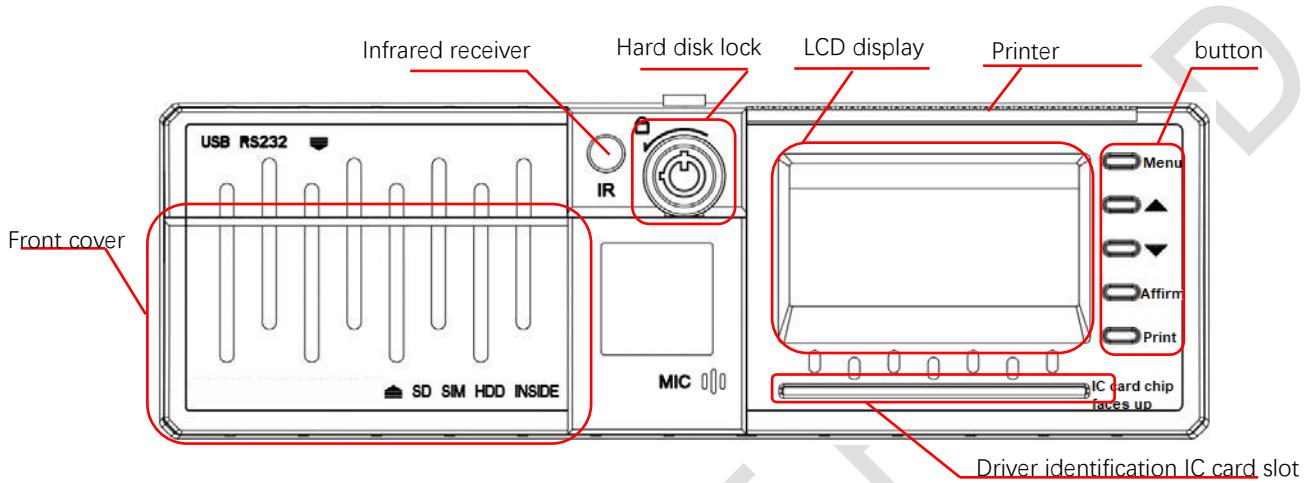


Figure 1: Front view of the host

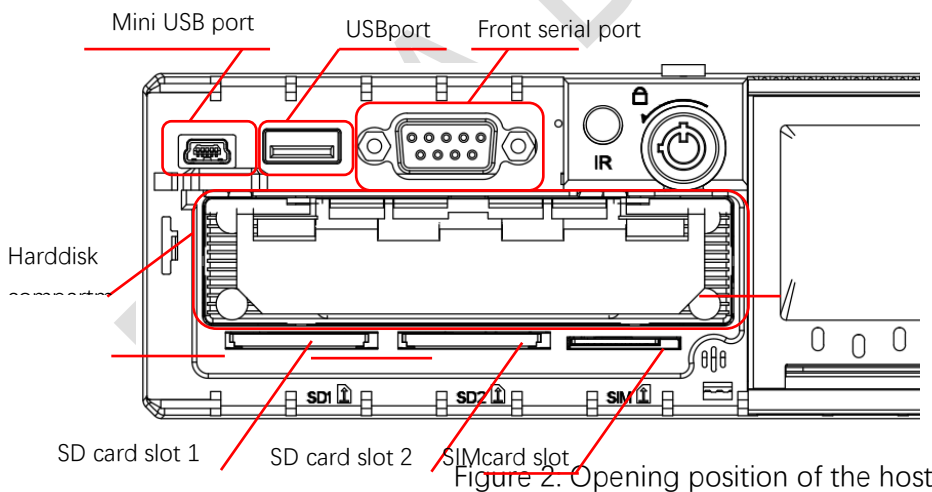


Figure 2: Opening position of the host

7.1. Rear view of the host



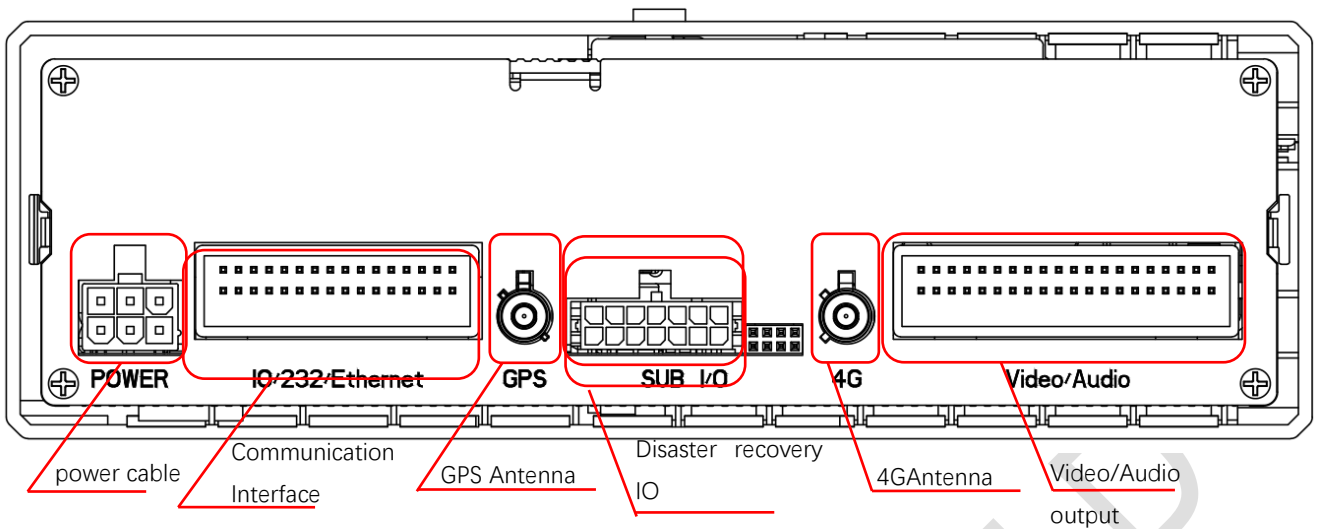


Figure3: Host Rear panel icon

7.2. System connection diagram

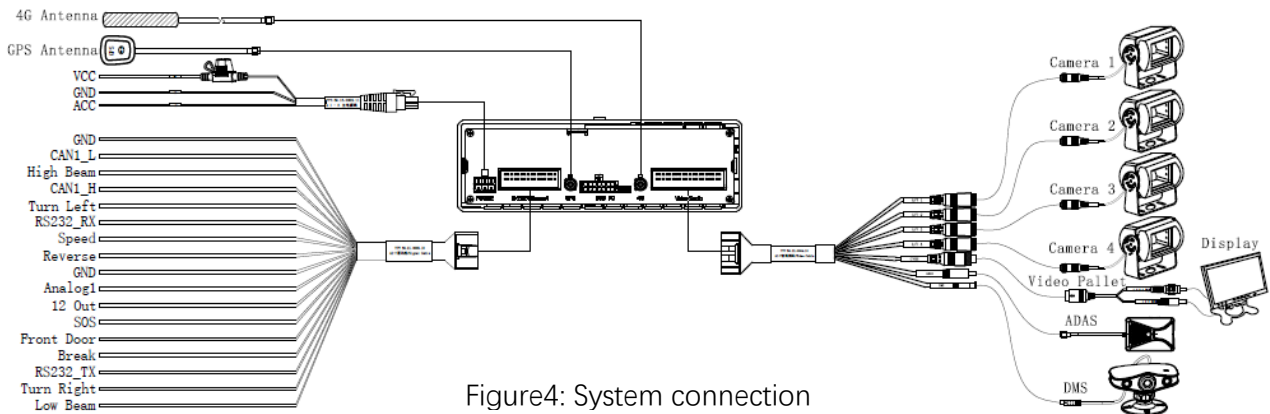


Figure4: System connection

Note: The solution is flexible and can be customized according to customer needs.

One, Product configuration list

1. ProductBoxChecklist

| Serial number | name | Quantity | unit | Remarks |
|---------------|------|----------|------|---------|
|---------------|------|----------|------|---------|



| | | | | |
|----|---------------------------------------|---|---------|--|
| 1 | AI-5-E host | 1 | station | |
| 2 | power cable | 1 | root | |
| 3 | GPS antenna | 1 | root | |
| 4 | 4G antenna | 1 | root | |
| 5 | Host bracket | 2 | A | |
| 6 | Mounting screws for mainframe bracket | 4 | Piece | |
| 7 | Door lock key | 1 | string | |
| 8 | Triangle certificate | 1 | | |
| 9 | Driver Identification Card | 2 | | |
| 10 | Cross countersunk flat head screws | 6 | A | 2× fixed hard disk and hard disk box 4×Fixed bracket and host |

Table 1: Product standard list

2. Product accessories

2.1. Option list

| Category | classification | Category | classification |
|----------|-------------------------|----------------|----------------|
| DMS | DMS camera standard | Storage medium | SD card |
| | High-profile DMS camera | | hard disk |

Table 2:OptionChecklist

| Category | classification | Category | classification |
|------------------------------|-----------------------------------|----------------------------|--------------------------------------|
| ADAS | High-profile ADAS camera standard | CVBS screen 7 inch 800*400 | Display |
| | ADAS camera | | Video patch cord |
| BSD | BSD camera | remote control | Infrared remote control |
| HOD | HOD camera | | AAA battery |
| OCD | OCD camera | Audible alarm | Audible alarm |
| Multi-camera | Multi-channel camera | | Sound and light alarm extension cord |
| Host optional wiring harness | Communication wire harness | Other Accessories | Mounting frame |
| | Audio and video wiring harness | | USB WiFi |
| | 14PIN wiring harness | | Hand mark |
| | Camera extension cord | | External speaker |
| | | | Internet of Things card |



2.2. Configuration reference

- ⤴ The product configuration is flexible. The following simplified configurations are for reference only. For details, please contact sales or technical support.

3. Equipment harness

- ⤴ A variety of functions combination selection. For details, please contact sales or technical support.

3.1. Power harness

- ⤴ For products power and ignition signal access

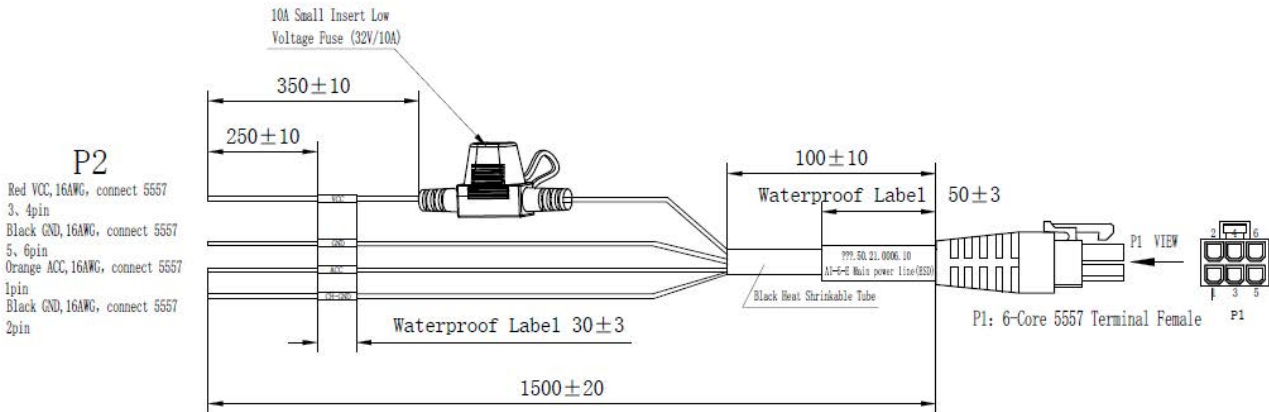


Figure 5: Illustration of power harness

| P2 end harness specifications | | | | 6 core big 5557 female head at P1 end |
|-------------------------------|------------|--------------|---------------|---------------------------------------|
| Pin | definition | Thread color | Label content | Numbering |
| 1 | ACC | Orange | ACC | |
| 3 | VCC | Red Fuse | VCC | |
| 4 | | | | |
| 5 | GND | Black | GND | |
| 6 | | | | |

Table 3:Harness PinFoot definition

3.2. Communication harness

- ⤴ Used to connect car body hardware cable signals, such as brakes, left/right turn signal, far/Low beam lights, CAN Communication. Detailed reference harness definition below



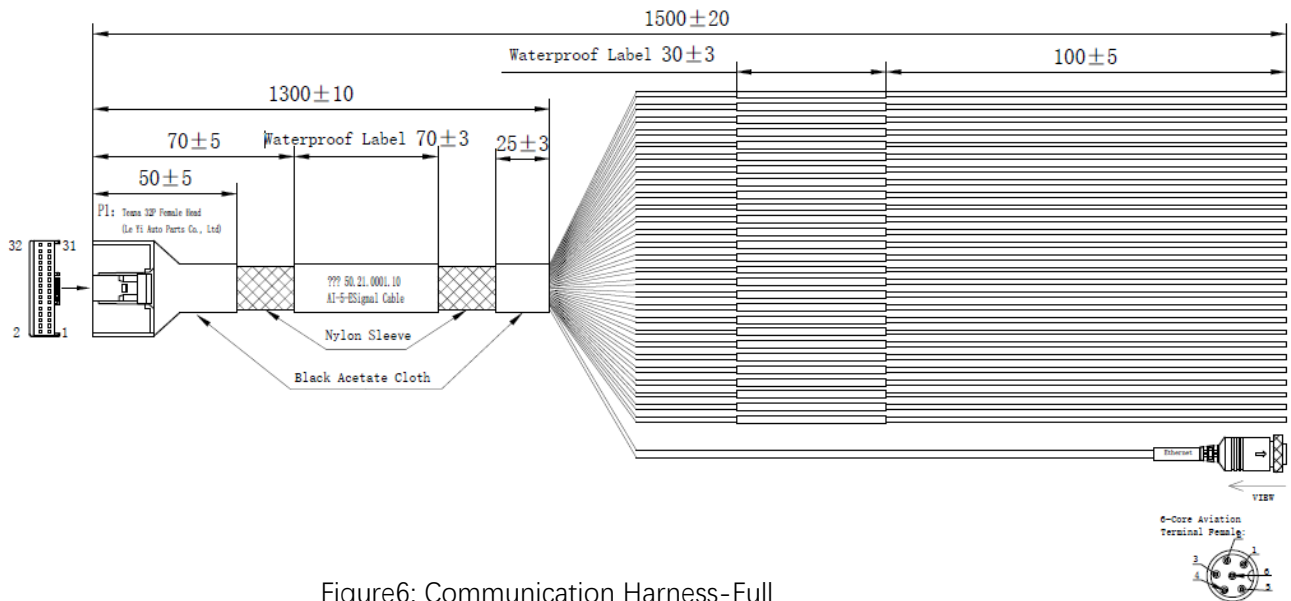


Figure6: Communication Harness-Full

| P1 Teana 32P Female | | | | | | | | | | P2 6-pin aviation plug female | | |
|---------------------|--------------------------|----------|-----|--------------------------|----------|-----|---------------------|----------|-----------|-------------------------------|--------------|-----------|
| Pin | Label content | read col | Pin | Label content | read col | Pin | Label content | read col | Numbering | Pin | label conten | Numbering |
| 1 | GND | black | 10 | Emergency alarm/SOS | green | 19 | Speed/Speed In | blue | | 28 | GND | |
| 2 | Low beam/Low Beam | green | 11 | 12V output/12V Out | red | 20 | RS232_RX | blue | | 29 | TX+ | |
| 3 | +5V | red | 12 | 12V-1 | blue | 21 | Turn Left | green | | 30 | TX- | |
| 4 | Turn right | green | 13 | Analog input 1/Analog I | green | 22 | CAN1_H | blue | | 31 | RX+ | |
| 5 | RS232_TX | green | 14 | 12V-2 | blue | 23 | High beam/High Beam | green | | 32 | RX- | |
| 6 | Brake/Brake | green | 15 | analog input 2/Analog In | green | 24 | CAN1_L | green | | | | |
| 7 | gnal output 2/Signal Out | blue | 16 | GND | black | 25 | CAN2_H | blue | | | | |
| 8 | Front Door/Front Door | green | 17 | Reverse | green | 26 | CAN2_L | green | | | | |
| 9 | gnal output 3/Signal Out | blue | 18 | gnal output 1/Signal Out | blue | 27 | GND | black | | | | |

Table 4: Communication wiring harness full pin definition

3.3. Audio and video wiring harness

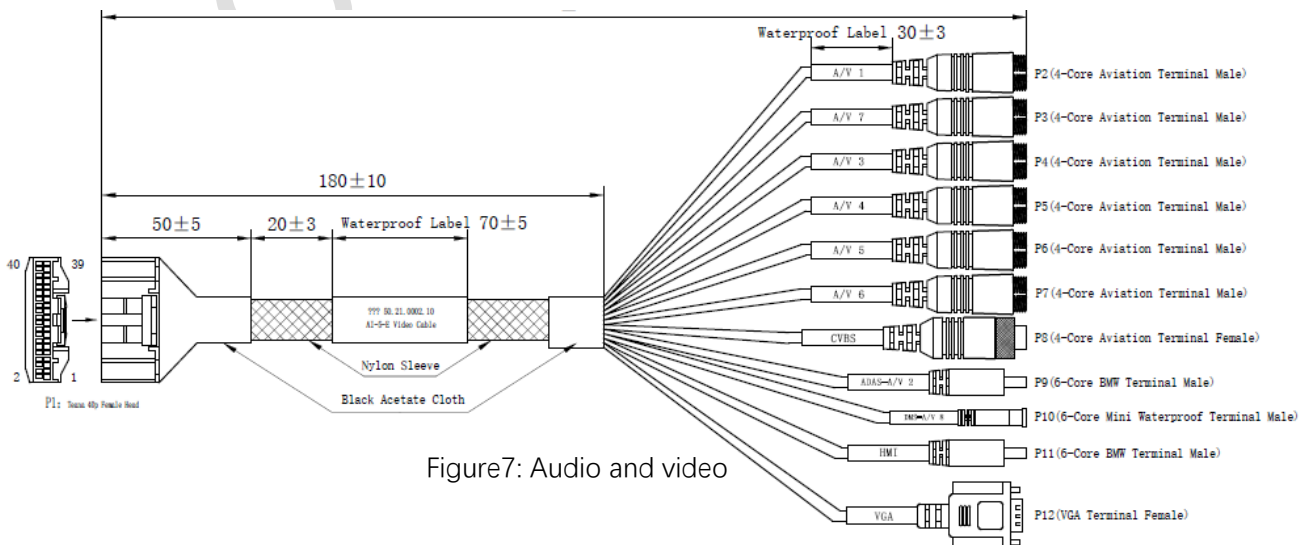


Figure7: Audio and video



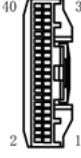













| P1 Teana 40P Female | | | PC-7 4-core aviation male | | | P1 Teana 40P Female | | P8 4-pin aviation male | | |
|---------------------|---------------|---|---------------------------|---|---|---------------------|---------------|------------------------|---|---|
| Pin | Label content | Numbering | Pin | Label content | Numbering | Pin | Label content | Pin | Label content | Numbering |
| 1 | CAM1-PWR-1 |  | 1 | V12 |  | 27 | CAM4-PWR-1 | 1 | V12 |  |
| 2 | GND | | 2 | GND | | 40 | GND | 2 | GND | |
| 6 | AUDIO-IN1 | | 3 | AIN-1 | | 31 | A-OUT | 3 | A-OUT | |
| 2 | VIDEO-IN1 | | 4 | VIN-1 | | 29 | CVBS-Out | 4 | CVBS-Out | |
| 1 | CAM1-PWR-1 | | 1 | V12 |  | 25 | CAM4-PWR-12V | 4 | V12 |  |
| 3 | GND | | 2 | GND | | 11 | GND | 6 | GND | |
| 30 | AUDIO-IN7 | | 3 | AIN-7 | | 4 | VIDEO-IN2 | 5 | VIN-2 |  |
| 26 | VIDEO-IN7 | | 4 | VIN-7 | | 23 | ADAS-TXD | 2 | ADAS-RX | |
| 9 | CAM1-PWR-1 | | 1 | V12 |  | 21 | ADAS-RXD | 1 | ADAS-TX | |
| 11 | GND | | 2 | GND | | 25 | CAM4-PWR-12V | 1 | V12 |  |
| 14 | AUDIO-IN2 | | 3 | AIN-3 | | 19 | GND | 2 | GND | |
| 10 | VIDEO-IN2 | | 4 | VIN-3 | | 8 | AUDIO-IN2 | 3 | AIN-2 | |
| 9 | CAM1-PWR-1 | | 1 | V12 |  | 28 | VIDEO-IN8 | 4 | VIN-8 | |
| 11 | GND | | 2 | GND | | 27 | CAM4-PWR-12V | 1 | V12 |  |
| 16 | AUDIO-IN4 | | 3 | AIN-4 | | 40 | GND | 2 | GND | |
| 12 | VIDEO-IN4 | | 4 | VIN-4 | | | | 3/4 | Leave blank |  |
| 17 | CAM1-PWR-1 | | 1 | V12 |  | 7 | HMI-TXD | 5 | HMI-TXD | |
| 19 | GND | | 2 | GND | | 5 | HMI-RXD | 6 | HMI-RXD | |
| 22 | AUDIO-IN5 | | 3 | AIN-5 | | 35 | VGA-R-Con | 1 | VGA-R-Con | |
| 18 | VIDEO-IN5 | | 4 | VIN-5 | | 36 | VGA-HS | 13 | VGA-HS | |
| 17 | CAM2-PWR-1 | 1 | V12 |  | 37 | VGA-G-Con | 2 | VGA-G-Con |  | |
| 19 | GND | 2 | GND | | 38 | VGA-VS | 14 | VGA-VS | | |
| 24 | AUDIO-IN6 | 3 | AIN-6 | | 39 | VGA-B-Con | 3 | VGA-B-Con | | |
| 20 | VIDEO-IN6 | 4 | VIN-6 | | 40 | GND | | GND | | |
| | | | | | | | 5/6/7/8/10 | GND | | |
| | | | | | | | 4/9/11/12/13 | Leave blank | VGA | |

Table 5: Audio and video wiring harness full pin definition



Three, Product function overview

1. Remote control introduction

This product can be optionally equipped with CVBS screen, and use the remote control to change various settings of the device.

2. Features

| Function type | Function Description | Voice prompts |
|-----------------------------------|--|--------------------------------------|
| Advanced driver assistance system | | |
| Lane departure | LDW: Lane Departure Warning When the vehicle speed exceeds the set value, the device will issue a warning when the driver leaves the lane unintentionally | "Beep Beep" |
| Forward collision | FCW: Forward Collision Warning If the vehicle speed exceeds the set speed and the collision time with the preceding vehicle is lower than the set safety time threshold, the device will issue an early warning | "Doodle Doodle" |
| Distance detection | HMW: Headway Monitoring & Warning When the vehicle speed exceeds the set value and the distance is kept less than the set minimum time interval, the device will issue an early warning | "Please keep the distance" |
| Pedestrian collision warning | PCW: Pedestrian Collision Warning Warn about impending collisions with pedestrians in front of the car | "Doodle" |
| Traffic sign recognition | TSR: Traffic Sign Recognition When the vehicle is on the road, identify and judge the traffic signs in advance | According to the logo identifyprompt |
| Zebra crossing detection | CWW: Cross Walk Warning When the vehicle is on the road and the zebra crossing is recognized in advance, the device will issue an early warning | "Please note at the intersection" |
| Camera blocking | Covering the camera fora period exceeding the set time, the device will issue an occlusion alarm | "Abnormal forward camera" |

Table 6: Features introduction



| Function type | Function Description | Voice prompts |
|---------------------------------------|--|---|
| Driver status monitoring | | |
| Fatigue driving warning | When it is found that the driver enters the doze state and exceeds the set warning threshold, the device sends out an alarm | "You are tired, please be safe" |
| Distracted driving warning | When the driver's attention is not focused on the road ahead, including the occurrence of head-up, head-down, and left-right look,yawn, the device sounds an alarm when looking down at a mobile phone and other actions | "Please pay attention to the front" |
| phone | When the driver makes a call while driving, the device issues an alarm | "Please concentrate on driving" |
| Smoking | When the driver smokes while driving, the device will give an alarm | "Please concentrate on driving" |
| Driver abnormal alarm | When the driver deviates from the driving position and the device cannot detect the driver's face, the device issues an alarm | "Dang~Dang~" |
| Sunglasses blocking | When the driver wears infrared blocking sunglasses while driving, the device sends out an alarm | "Please replace sunglasses" |
| Substitution reminder | After the vehicle turns from stop to travel and reaches the set speed, the device monitors the identity of the driver, and when a driver change is detected, the device issues a voice prompt | "Driver has changed" |
| Camera blocking | If the blocking object covers the driver's status monitoring camera for more than the set time, the device will send out a blocking alarm | "Do not block the camera" |
| Blind zone detection auxiliary system | | |
| Right blind spot detection | RBSD: Right-Blind Spot Detection When the vehicle is driving and detects the presence of pedestrians, vehicles and other obstacles on the right blind area, the device will issue a warning, | "Please note the pedestrian on the right" |
| Other auxiliary systems | | |
| Hand detachment | HOD: Hands-Off Detection When the driver is driving and the hand is off the steering | "Please hold the steering wheel with |



| | | |
|-----------------|--|--|
| detection | wheel, the device will issue a warning | both hands" |
| Aisle overrun | OCD: Overcrowded Detection When the aisle is overrun, the device will issue a warning | "Do not stand in the aisle" |
| Intense driving | Rapid acceleration, abrupt deceleration, sharp turn, vehicle rollover | According to the marked driving instructions |

Continued Table 6: Features introduction

3. Other main functions

| Function type | Function Description |
|-------------------------|---|
| System functions | Equipment self-check, remote upgrade and configuration, local recording, alarm upload |
| APP calibration | Support "Roaddefend" APP for device calibration |
| Platform docking | The default docking platform can support docking of other mini-standard platforms |
| Connectable peripherals | AHD cameras, sound and light alarms, speakers, etc. |

Table 7: Other functions

Four, Product specification

| Basic Information | | |
|--------------------------|-----------------------|--|
| Product size (mm) | 188×184×60 | |
| Rated power (W) | MAX: 52W | |
| Working parameter | Operating temperature | -25~70°C |
| | storage temperature | -40~85°C |
| | Relative Humidity | 10~90% RH(No condensation) |
| | Operating Voltage | 8~32V |
| communication/Peripheral | 4G | Support wide range of operators |
| | | Independent SIM card slot |
| | Positioning module | GPS/BD dual mode, blue Fakra interface |
| | | FAKRA C/Blue antenna interface |



| | | |
|--|------------|--|
| | | Support positioning antenna open circuit and short circuit detection |
| | RS232 | stand by5×RS232, baud rate adjustable, 3 of which are multiplexed |
| | RS485 | stand by1×RS485 |
| | CAN | stand by2×CAN communication, adjustable baud rate |
| | Ethernet | Provide IPC network sharing |
| | Infrared | Support 1× infrared receiver |
| | DI | stand by8×Digital input+1Pulse input |
| | DO | stand by3×5VDigital output |
| | AD | stand by2×Analog input, accuracy12bit, Detectable0-36VVoltage |
| | powered by | stand by12Vwith5V pair external power supply |

Table 8:specification explanation

| Basic Information | | |
|-------------------------------|-----------|--|
| video | enter | MAX 8 video inputs |
| | Output | stand by1×CVBSOutput,band12VPower output |
| Audio | enter | MAX 8 waysound frequency input |
| | Output | stand by2×Audio output, ×1 built-in device, ×1 external amplifier |
| storage | EMMC | Inside EMMC, support loop recording |
| | hard disk | stand by2.5-inch 7mm mechanical/solid-state SATA hard disk, maximum support 2T |
| | SD | MAX support2×SD card, maximum support 256G |
| | other | Shock-absorbing design, door lock control |
| External interface | | Power interface: 6pin |
| | | Communication Interface: 32pin |
| | | Audio and video port: 40pin |
| | | Extension ports: 14pin |
| Wi-Fi | | External USB Wi-Fi: MT7601, 802.11n, USB2.0 interface |
| printer | | Built-in printer |
| Driver identification IC card | | Contact IC card |

Continued Table 8:specification explanation

Five, User notice

1. This product is a fullHDVehicle-mounted intelligent analysis system and can help enterprises



manage fleet in real-time and understand the running state of the vehicle.

2. Drivers can use this product to reduce the possibility of traffic accidents caused by manual driving, but they cannot replace safe driving.
3. Installation and calibration will affect the identification and response of the system. The installation and calibration must be carried out by a dealer or professional installer authorized by our company during installation.
4. Road and weather conditions will affect ADAS, the recognition and response of the BSD function have an impact. In the case of unclear road markings and bad weather, the system recognition accuracy will decrease.
5. This product is designed to improve driving safety and reduce the incidence of accidents. During use, you must ensure that the camera has a clear field of view and avoid damage to the equipment.

FCC Statement:

Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. 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.
- (2) This device must accept any interference received, including interference that may cause undesired operation.

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 & your body.

