



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;



Table of Contents

One, Product Brief.....	4
1. product description.....	4
2. feature of product.....	4
3. Appearance description.....	5
3.1. Host view.....	5
3.2. Rear view of the host.....	5
3.3. System connection diagram	6
Two, Product configuration list.....	6
1. Product packing list.....	6
2. Product accessories	7
2.1. Option list.....	7
2.2. Configuration reference.....	8
3. Equipment harness	8
3.1. Power harness.....	8
3.2. Communication harness.....	8
3.3. Audio and video wiring harness.....	9
Three, Product function overview	11
1. Remote control introduction	11
2. Features	11
3. Other main functions	13
Four, Product specification.....	13
Fives, User notice.....	14



One, Product Brief

1. Product description

The product is a full HD vehicles driving recorder with intelligent analysis systemintegrated, 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 softwarethe stability,compatibility, maintainability and performance of the OS throughout its lifetime.

2. Product features

- * Full-featured active safety integrated machine
 - ʌ GPS positioning
 - ʌ Built-in LCD display and printer
 - ʌ Maximum support8 channels 1080P HD audio and video input
- * Professional and powerful AI chip
 - ʌ 4-core A53 processor, 1.2TOPS NPU,Native SATAinterface, 64-bit DDR4
 - ʌ It can also support DMS, ADAS, BSD, HOD, OCD and other algorithms, and has further algorithm scalability
- * Simple and stable hardware design
 - ʌ GPS optimized design, minimize circuit interference
 - ʌ Damping support structure for hard disk storage, vehicle shaking resistance and adapt to various road conditions
- * Professional and reliable system solutions
 - ʌ Built-in EMMC, support loop recording, dual backup for emergency recording
 - ʌ Built-in battery and optimized power supply design, guaranteed at the moment of external power failure
 - ʌ Roadefend dedicated video file system, ensure the confidentiality and security of video data
- * Professional and reliable active safety
 - ʌ 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

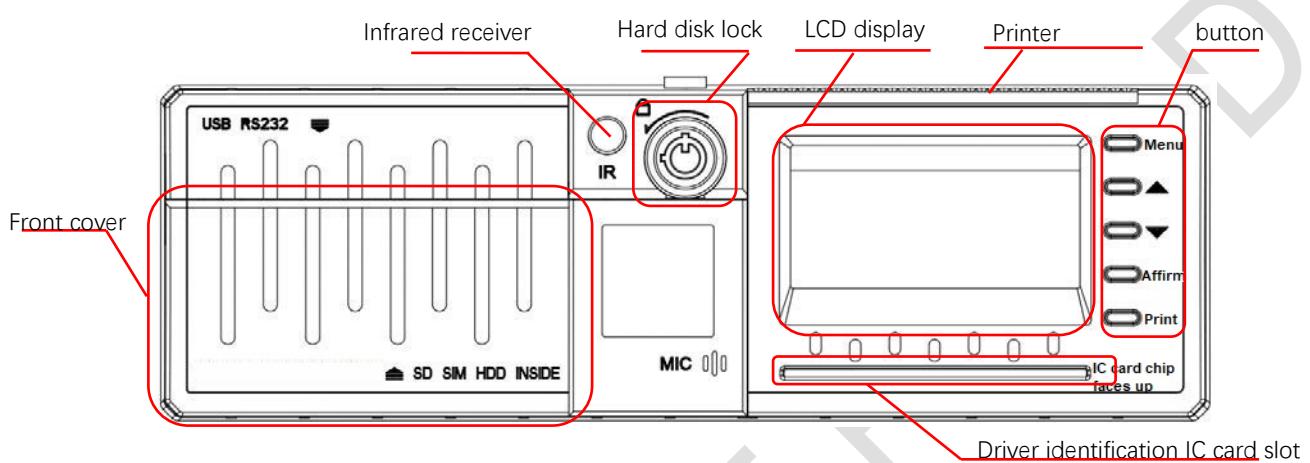


Figure 1: Front view of the host

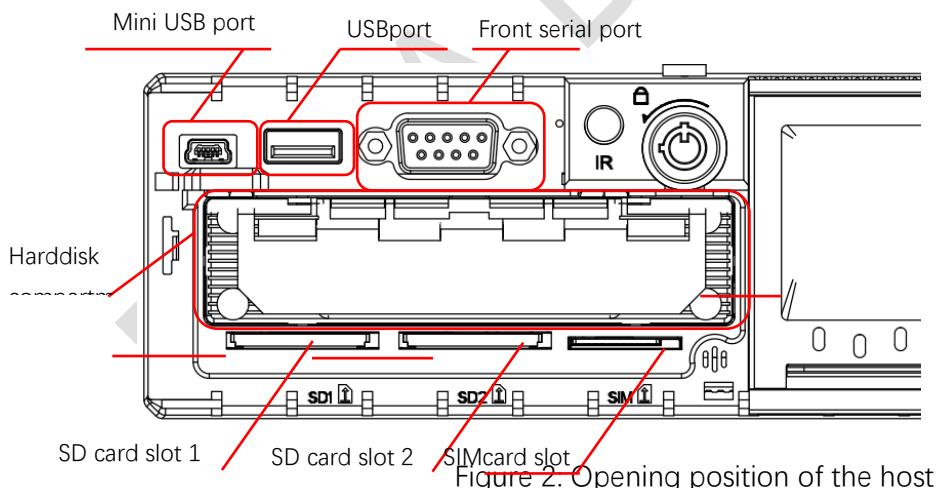


Figure 2: Opening position of the host

7.1. Rear view of the host



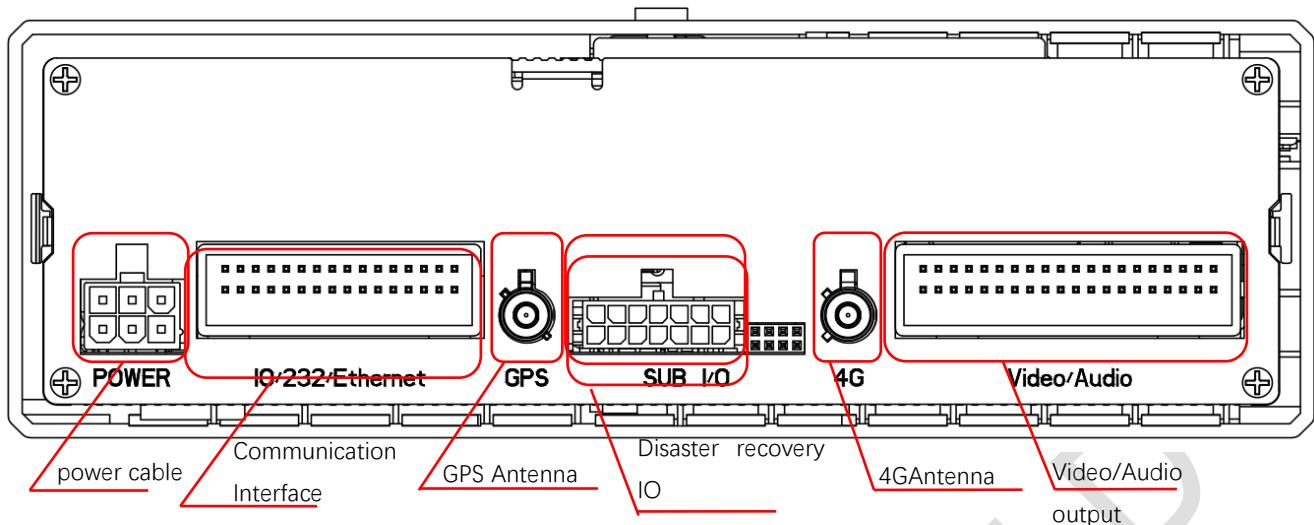


Figure3: Host Rear panel icon

7.2. System connection diagram

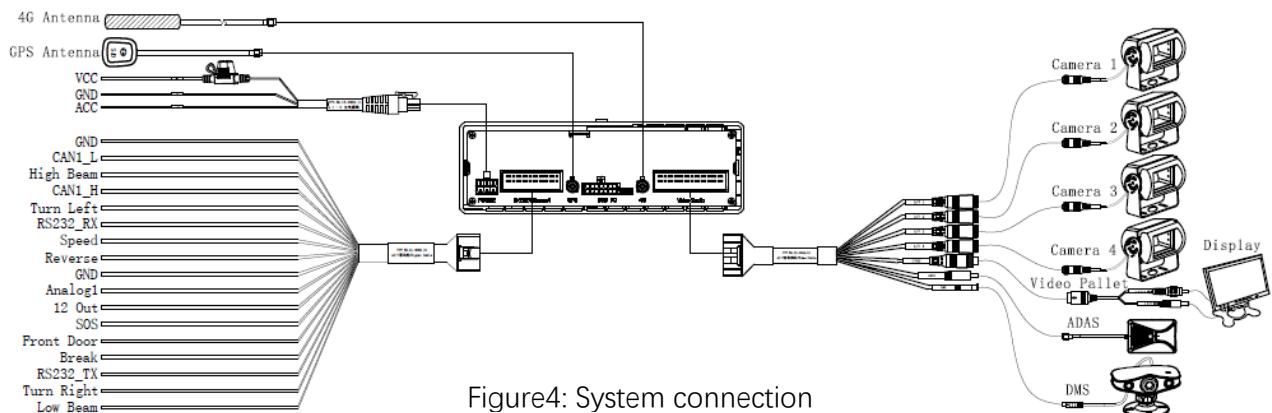


Figure4: System connection

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
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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	2x fixed hard disk and hard disk box 4xFixed 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: Option Checklist

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 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

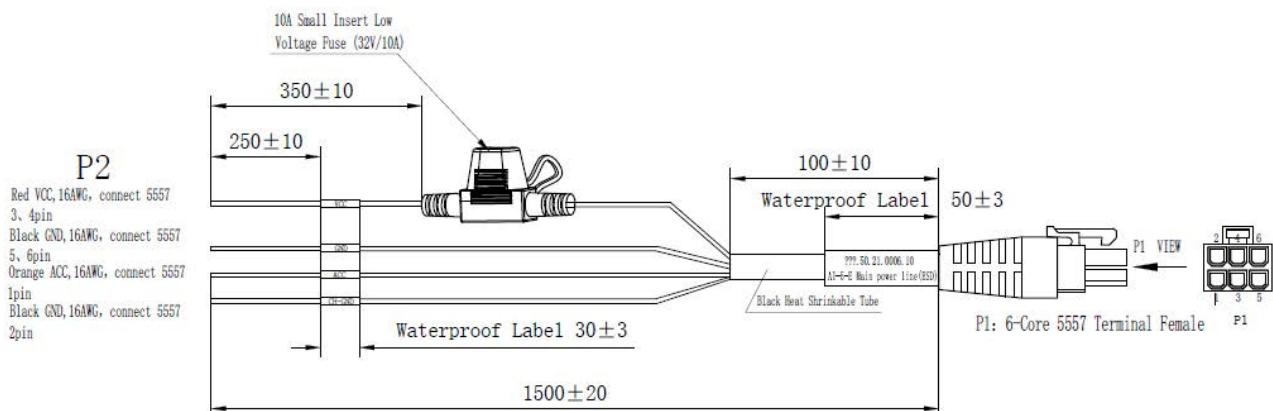


Figure 5: Illustration of power harness

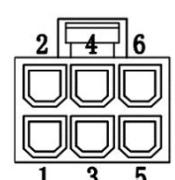
P2 end harness specifications				6 core big 5557 female head at P1 end	
Pin	definition	Thread color	Label content	Numbering	
1	ACC	Orange	ACC		
3	VCC	Red Fuse	VCC		
4					
5	GND	Black	GND		
6					

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



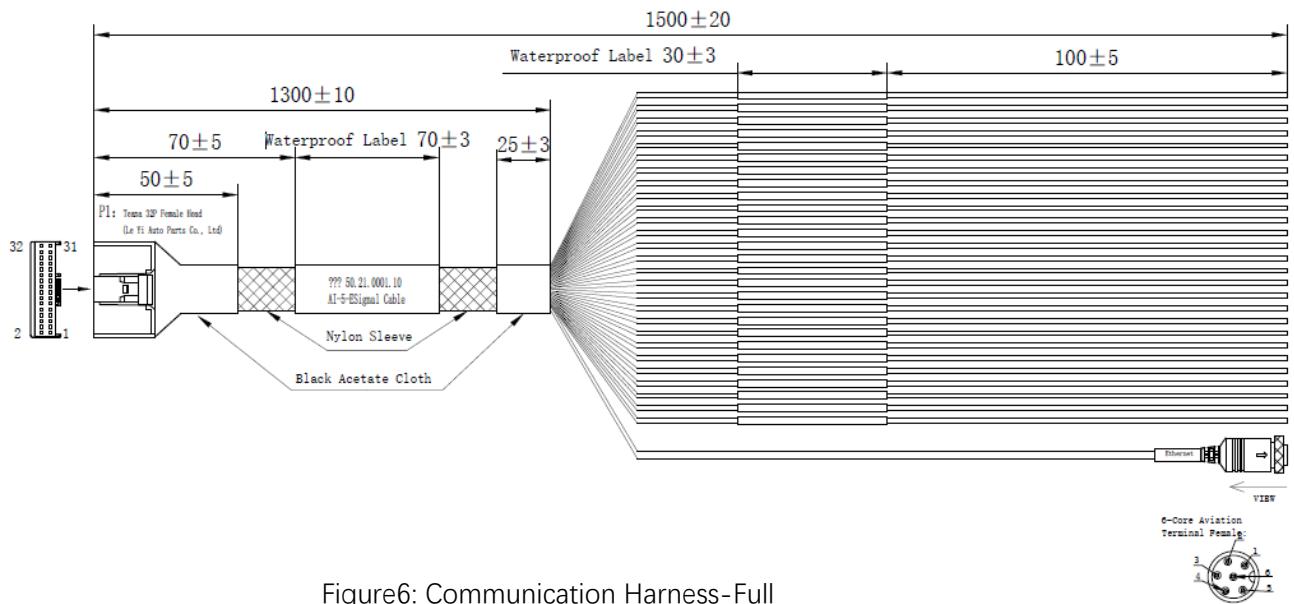


Figure6: Communication Harness-Full

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 content	Numbering
1	GND	black	10	Emergency alarm/SOS	green	19	Speed/Speed In	blue	32	28	GND	
2	Low beam/Low Beam	green	11	12V output/12V Out	red	20	RS232_RX	blue	31	29	TX+	
3	+5V	red	12	12V-1	blue	21	Turn Left	green	2	30	TX-	
4	Turn right	green	13	Analog input 1/Analog In	green	22	CAN1_H	blue	1	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	ignal output 2/Signal Ou	blue	16	GND	black	25	CAN2_H	blue				
8	Front Door/Front Door	green	17	Reverse	green	26	CAN2_L	green				
9	ignal output 3/Signal Ou	blue	18	ignal output 1/Signal Ou	blue	27	GND	black				

Table 4: Communication wiring harness full pin definition

3.3. Audio and video wiring harness

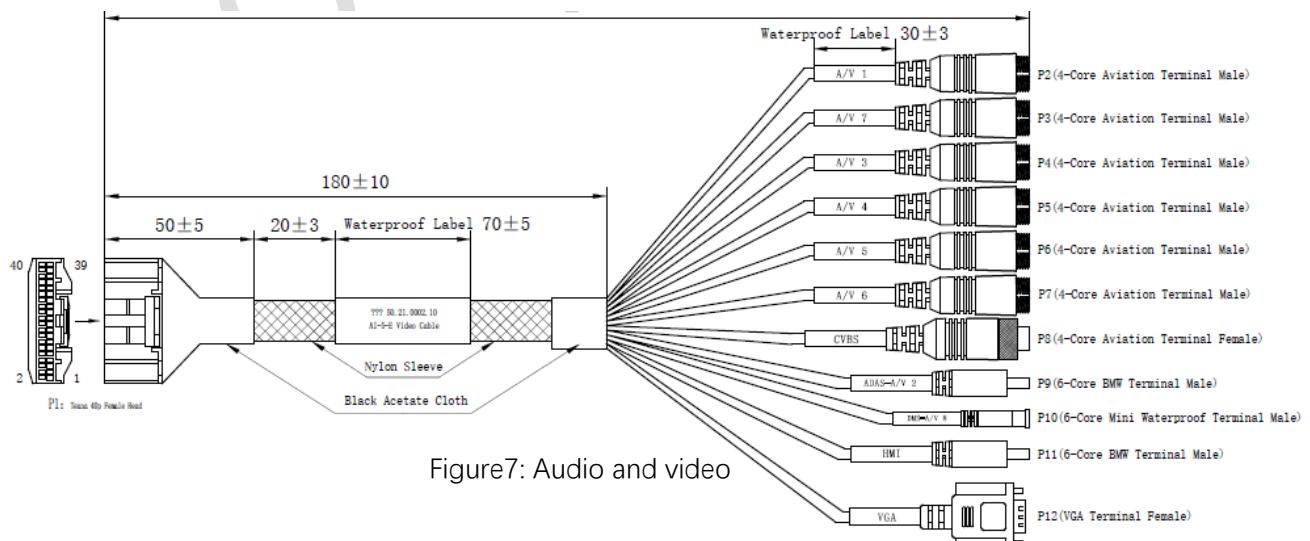


Figure7: Audio and video

P1 Teana 40P Female			P2 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	Numbering	Pin	Label content	Numbering
1	CAM1-PWR-1	40	1	V12	3	P2	27	CAM4-PWR-1	1	V12	2
3	GND		2	GND	4	P2	40	GND	2	GND	3
6	AUDIO-IN1		3	AIN-1	29	P2	31	A-OUT	3	A-OUT	4
2	VIDEO-IN1		4	VIN-1	29	P2	32	CVBS-Out	4	CVBS-Out	5
1	CAM1-PWR-1		1	V12	3	P2	25	CAM2-PWR-12V	4	V12	6
3	GND		2	GND	11	P2	26	GND	5	VIN-2	7
30	AUDIO-IN7		3	AIN-7	4	P2	27	VIDEO-IN7	6	ADAS-TXD	8
26	VIDEO-IN7		4	VIN-7	23	P2	28	ADAS-RX	7	ADAS-RX	9
9	CAM1-PWR-1		1	V12	21	P2	29	ADAS-RXD	1	ADAS-TX	10
11	GND		2	GND	25	P2	30	CAM3-PWR-12V	1	V12	11
14	AUDIO-IN3		3	AIN-3	19	P2	31	GND	2	GND	12
10	VIDEO-IN3		4	VIN-3	8	P2	32	AUDIO-IN3	3	AIN-2	13
9	CAM1-PWR-1		1	V12	28	P2	33	VIDEO-IN8	4	VIN-8	14
11	GND		2	GND	27	P2	34	CAM4-PWR-12V	1	V12	15
16	AUDIO-IN4		3	AIN-4	40	P2	35	GND	2	GND	16
12	VIDEO-IN4		4	VIN-4		P2	36		3/4	Leave blank	17
17	CAM1-PWR-1		1	V12	7	P2	37	HDMI-TXD	5	HDMI-TXD	18
19	GND		2	GND	5	P2	38	HDMI-RXO	6	HDMI-RXO	19
22	AUDIO-IN5		3	AIN-5	35	P2	39	VGA-R-Con	1	VGA-R-Con	20
18	VIDEO-IN5		4	VIN-5	36	P2	40	VGA-HS	13	VGA-HS	21
17	CAM2-PWR-1		1	V12	27	P2	41	VGA-G-Con	2	VGA-G-Con	22
19	GND		2	GND	28	P2	42	VGA-VS	14	VGA-VS	23
24	AUDIO-IN6		3	AIN-6	39	P2	43	VGA-B-Con	3	VGA-B-Con	24
20	VIDEO-IN6		4	VIN-6	40	P2	44	GND	5/6/7/8/10	GND	25
						P2	45		4/9/11/12	Leave blank	26
						P2	46		1/12	VGA	27

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 identify prompt
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 for a 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 "Roadefend" 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)	188x184x60	
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.

