



N-Driver P301 User Manual

Technology Makes Travel Better



Company Profile

WUHAN XUANYUAN IDRIVE TECHNOLOGY CO., LTD., relying on the military technology reserves of its parent company Guide Infrared, has realized the layout in the entire infrared industry chain. Characterized by self-research and production, and the safe and controllable core technology, the company is committed to applying the far-infrared technology to intelligent vehicles, thereby becoming an industry leader in the field of vehicle-mounted infrared thermal imaging. The main products of the company cover two categories: advanced driver assistance systems (ADAS) and smart cockpits. Among all the products, the vehicle-mounted thermal imaging intelligent driving system has achieved the world's leading technology level, supporting pedestrian and vehicle detection and recognition, alarms, and other functions. It can easily cope with complex road conditions such as darkness, haze, strong glare, etc., which greatly improves the vehicle's full-time perception capabilities, making it particularly suitable for night driving and intelligent driving.



GUIDE



Focus on infrared thermal imaging industry solutions



The expansion and popularization of infrared thermal imaging technology in the civilian sector



European branch, serving the markets of Europe and America



Mainly engaged in non-lethal police ammunition, after expansion, it has become a production, manufacturing, assembly and integration base for multiple types of missiles.



Mainly engaged in the research and development as well as sales of intelligent safety driving products



Focus on the fields of micro-electromechanical systems and sensing, and build R&D platforms, collaboration platforms and incubation platforms



01 A leading enterprise in infrared thermal imaging

- The largest infrared thermal imaging industrial park in Asia
- Market share of infrared thermal imaging ranking No. 1 in China and No. 2 in the world
- The first dual-color dual-band infrared detector in China, with world-leading key performance indicators



02 Military quality assurance

- An in-depth pilot unit for military-civilian integration program
- The first private company granted with second-level confidentiality qualification in Hubei Province
- China's first private company engaged in the overall research and development of weapon system



03 Core technology being independent and controllable

- Completely independent intellectual property rights, with more than 200 domestic and foreign patents
- Having a research and development base covering the entire infrared industry chain, from the bottom-level infrared core devices to the top-level complete optoelectronic systems



04 Multiple breakthroughs in intelligent driving projects

- Multiple intelligent driving application projects under trial production
- The first mass-produced infrared thermal imaging product for passenger cars and commercial vehicles in China
- Mature vehicle-mounted project import mechanism

technical strength

Core technology, independently controllable

An infrared detector batch production line with independent intellectual property rights; self-developed on-board infrared algorithms, industry-leading AI-ISP technology, AI super-resolution technology, segmentation rendering technology, and no-blocking algorithm technology, etc., have reached the industry-leading level, and the differentiated competitive advantages are remarkable.



Set industry standards

VEHIR was primarily responsible for formulating two national industry standards, namely "Passive Infrared Detection System for Automobiles" and "Performance Requirements and Test Methods for Passenger Vehicle Night Vision Systems". Over two hundred related patents were applied for, leading the application and promotion of vehicle infrared technology.



Vehicle-grade standards and quality system

Core components meet relevant standards such as AEC-Q. The new 8 μ m infrared detector chip has obtained AEC-Q100 certification. At the same time, the comprehensive introduction of the automotive quality management system compliant with IATF 16949 provides a systematic guarantee for the continuous high-quality delivery of products.



Mass production delivery capability

Core components meet relevant standards such as AEC-Q. The new 8 μ m infrared detector chip has obtained AEC-Q100 certification. At the same time, the comprehensive introduction of the automotive quality management system compliant with IATF 16949 provides a systematic guarantee for the continuous high-quality delivery of products.



Copyright

2024, WUHAN XUANYUAN IDRIVE TECHNOLOGY CO.,LTD., All rights reserved. (hereinafter referred to as the Company)

The trademarks and names mentioned in this User Manual are owned by the corresponding company by which they are legally registered.

Liability Statement

This Manual may not be copied, disseminated, transcribed, archived or translated into other languages or computer languages in any form or by any means (electronic, electromagnetic, optical or paper manual, etc.) without the permission of the Company.

This Manual is compiled for the convenience of users to use and understand the Company's products. We will do our best to ensure the accuracy of the contents of this Manual, but we still cannot guarantee the completeness of the contents of this Manual. Since our products are subject to continuous update and upgrade, the Company reserves the right to make changes at any time without prior notice.

Version History

Version	Time	Remarks
V1.0	June 20, 2024	First edition

Thank you very much for choosing our product. We recommend that you should read the User Manual carefully before using this product. We believe that it will be of great help to you in using this product correctly.

contents

Product Introduction	01
Product Parameters	02
Hardware Description	03
Infrared Camera Block Diagram	03
Wire Harness Definition Diagram	03
Product Structure and Dimensions	04
Product connection instructions	05
Product function overview	05
All-weather operation, enhanced night vision	05
Anti-glare function	05
Function of penetrating fog, haze and dust	05
Installation Instructions	06
Common Troubleshooting	06
Routine Operation and Maintenance	07
Friendly Reminder	07

Product Introduction



N-Driver P301 is a cost-effective aftermarket installed product with a resolution of 640×512 launched by WUHAN XUANYUAN IDRIVE TECHNOLOGY CO., LTD. The product is characterized by extremely low power consumption and extremely small size, provides CVBS analog video signal output, and has good convenience contributed by its plug-and-play feature. It expands the user's visual boundaries under adverse weather conditions such as dark light, strong light glare, haze, rain and snow, which reduces the probability of traffic accidents, and improves the safety of aided driving.

The product can be used as an aftermarket installed product and a driver-assistance system of off-road vehicles, special vehicles, mining vehicles, freight logistics vehicles, port and airport shuttle buses, and remote dispatching tractors. The product can be installed flexibly, and can be installed on the front grille, the rear or the roof of a car. It is waterproof and dustproof and supports washing with running water.



Passive thermal imaging
Non-dependent
on light source



All-time, all-weather sensing
Easily coping with harsh
weather conditions



IP69 dustproof and waterpro
of rating,Rinse directly with
running water



Analog video output
Plug-and-play



Segmented extension cord
Easy to install and deploy



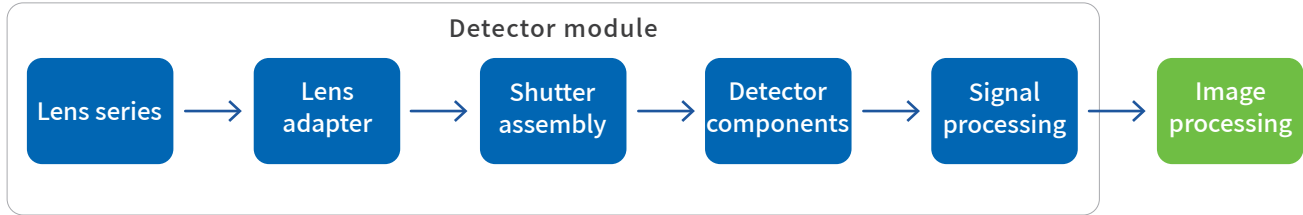
Intelligent defrosting
Automatic window heating

Product Parameters

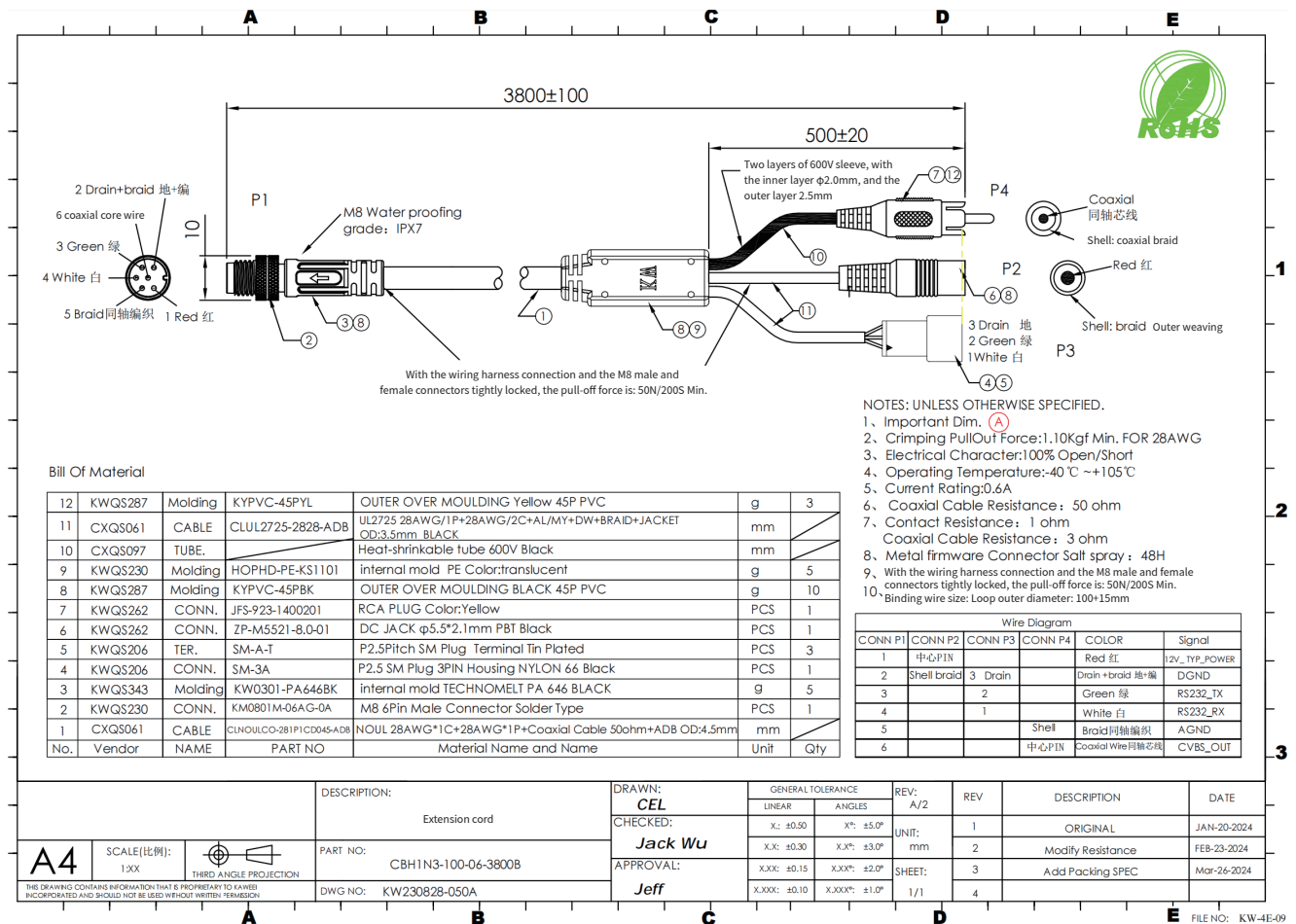
Infrared detector		
Detector type	Vanadium oxide uncooled infrared focal plane detector	
Response band	8~14 μm	
NETD	$\leq 60\text{mk}@25^\circ\text{C}, \text{F}\#1.0$	
Detector array	640 \times 512	
Image display performance		
Focal length	9.1mm	
Field of view	48.3 $^\circ$ \times 38.6 $^\circ$	
Spatial resolution	1.32mrad	
Video output interface	RCA lotus head	
Video output format	Analog video CVBS	
Video output resolution	PLA@720 \times 576	
	NTSC@720 \times 480	
Detection distance	Person: 1.8 m \times 0.5 m	Class B vehicle: 1.8 m \times 1.5m
	$\geq 200\text{m}$	$\geq 400\text{m}$
System features		
Rated voltage	DC9~32V (typically 12V)	
Overall power consumption	$\leq 1\text{W}@$ (12V power supply, window heating not activated)	
	$\leq 5\text{W}@$ (12V power supply, window heating activated)	
Imaging start-up time	$\leq 3.5\text{S}$ (normal temperature)	
Automatic heating function	When the window temperature is lower than $2^\circ\text{C} \pm 2^\circ\text{C}$, the intelligent heating will start automatically	
	When the window temperature is higher than $7^\circ\text{C} \pm 2^\circ\text{C}$, the heating function will be automatically turned off	
Shutter	Automatic shutter compensation	
Image algorithms	3D noise reduction RAW	
	AI image enhancement	
Physical properties		
Camera size/weight	$\leq 28 \times 28 \times 55\text{mm}$	
Camera weight	$\leq 120\text{g}$	
Camera protection level	IP69	
Environmental parameters		
Operating temperature	-20 $^\circ\text{C}$ ~+70 $^\circ\text{C}$	
Storage temperature	-40 $^\circ\text{C}$ ~+80 $^\circ\text{C}$	
Environmental reliability	GB/T 28046.4-2011/GB/T 30038-2013	
Mechanical properties	GB/T 28046.3-2011/ISO 20567-1	
Electrical properties	GB/T 28046.2-2019	
Certification	CE	

Hardware Description

Infrared Camera Block Diagram

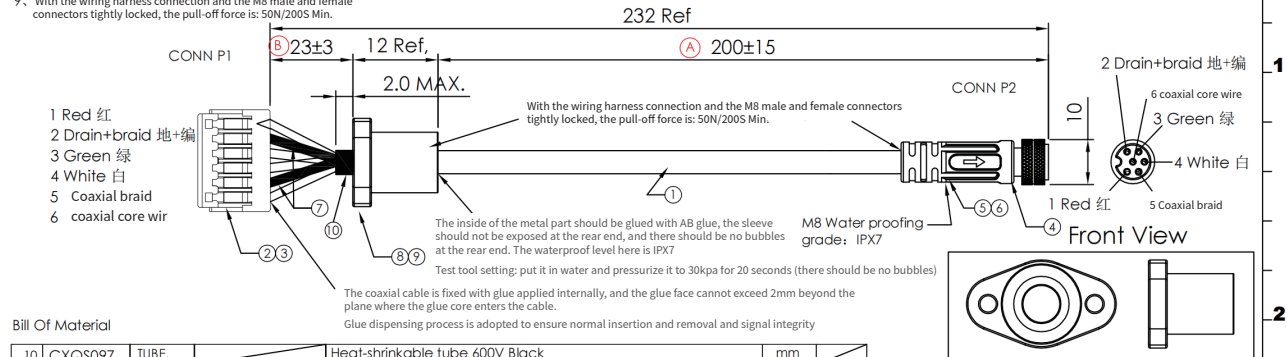


Wire Harness Definition Diagram





- NOTES: UNLESS OTHERWISE SPECIFIED.
1. Important Dim. (A) (B)
 2. Crimping PullOut Force: 1.10Kgf Min. FOR 28AWG
 3. Electrical Character: 100% Open/Short
 4. Operating Temperature: -40°C ~+105°C
 5. Current Rating: 0.6A
 6. Coaxial Cable Resistance: 50 ohm
 7. Contact Resistance: 400m ohm
 8. Metal firmware Connector Salf spray: 48H
 9. With the wiring harness connection and the M8 male and female connectors tightly locked, the pull-off force is: 50N/200S Min.



Bill Of Material

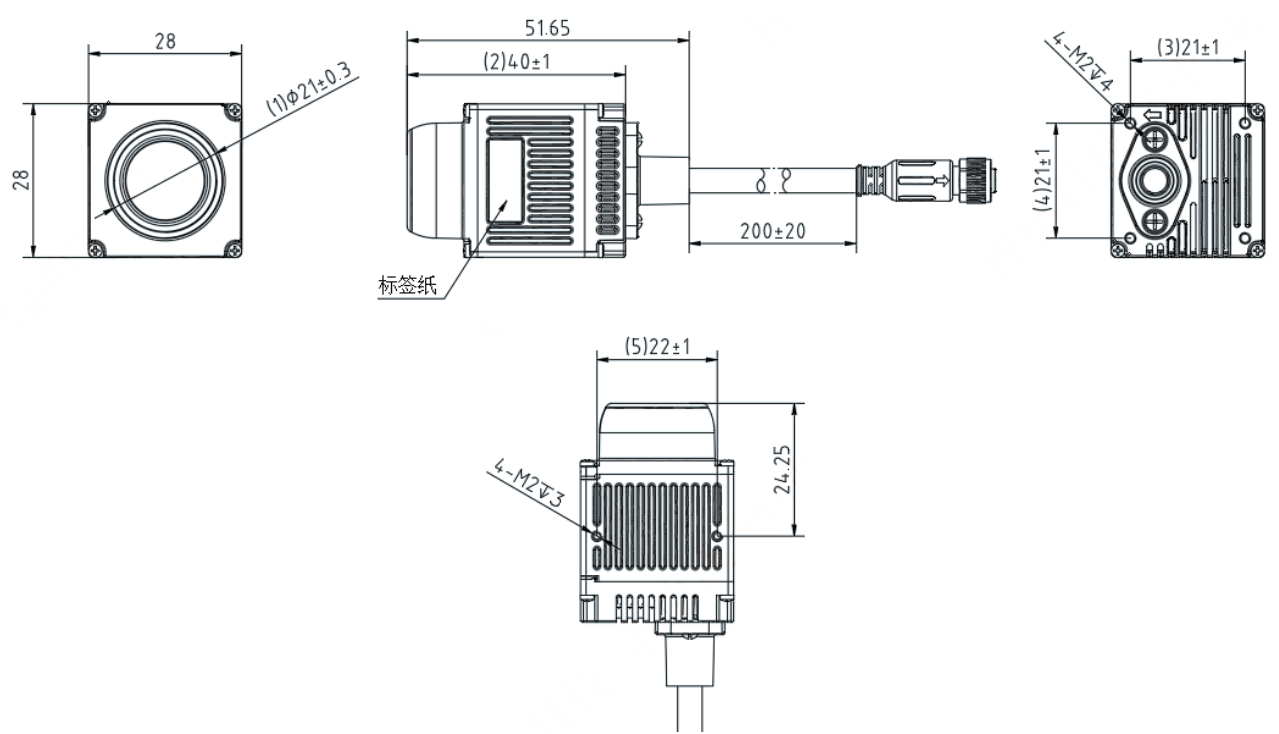
No.	Vendor	NAME	PART NO	Material Name and Name	Unit	Qty
10	CXQS097	TUBE.		Heat-shrinkable tube 600V Black	mm	
9	KWQS287	O-Ring		O-Ring OD:11.0mm*ID8.0mm*1.5mm SILICONE RUBBER	PCS	1
8	KWQS388	Metal	KW0309-JGXH03A-0027C	Metal firmware : SUS316 Passivation, Natural		1
7	CXQS097	TUBE.		Heat-shrinkable tube 600V Black		
6	KWQS262	Molding	KYPVC-45PBK	OUTER OVER MOULDING BLACK 45P PVC	g	10
5	KWQS343	Molding	KW0301-PA646BK	Internal mold TECHNOMELT PA 646 BLACK	g	5
4	KWQS206	CONN.	KM0801M-06AG-GA	M8 6Pin Female Connector Solder Type	PCS	1
3	KWQS230	TER.	11002TOP-2E-S-NK	PH1.0 Phosphor Bronze, Tin Plating	PCS	6
2	KWQS230	CONN.	11002H00-6P-HF	1.0 mm SH Housing 6P Without protrusions	PCS	1
1	CXQS061	CABLE	CLN0ULCO-281P1CD045-AD8	NOUL 28AWG*1C+28AWG*1P+Coaxial Cable 50ohm+AD8 OD:4.5mm	mm	

Wire Diagram

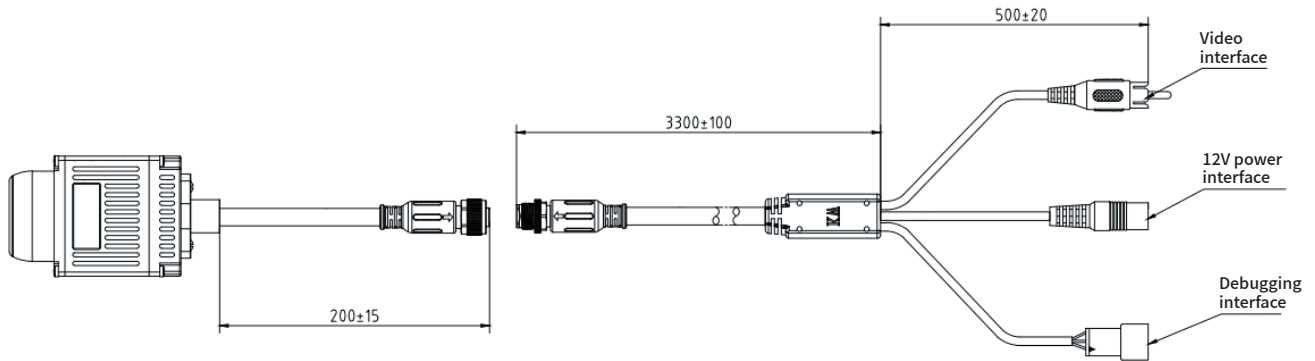
CONN P1	CONN P2	COLOR	Signal
1	1	Red 红	12V_TYP_POWER
2	2	Drain+braid 地+编	DGND
3	3	Green 绿	RS232_TX
4	4	White 白	RS232_RX
5	5	Coaxial braid	AGND
6	6	Coaxial Wire 同轴芯线	CVBS_OUT

A4	SCALE[比例]: 1:XX	THIRD ANGLE PROJECTION	DESCRIPTION: Wire reserve	PART NO: CBH1N3-100-06-232C	DWG NO: KW230828-050B	DRAWN: CEL		GENERAL TOLERANCE		REV: A/3	REV	DESCRIPTION	DATE
						CHECKED: Jack Wu	APPROVAL: Jeff	LINEAR	ANGLES				
						X: ±0.50	X°: ±5.0°			1	ORIGINAL	JAN-20-2024	
						X.X: ±0.30	X.X°: ±3.0°			2	Modify Resistance	FEB-23-2024	
						X.XX: ±0.15	X.XX°: ±2.0°			3	Modify Metal firmware	Mar-26-2024	
						X.XXX: ±0.10	X.XXX°: ±1.0°			4			

Product Structure and Dimensions



Product connection instructions



Product function overview

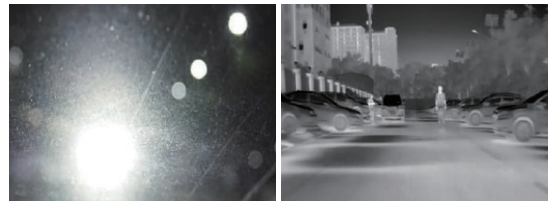
All-weather operation, enhanced night vision

The system's infrared images can break through night obstacles and be used all day long; it expands the driver's field of vision and solves the problem of limited field of vision during night driving.



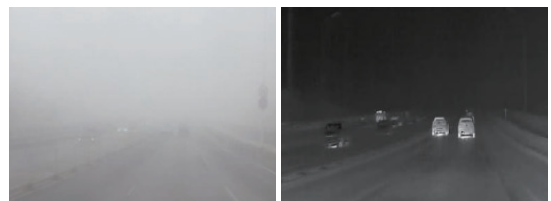
Anti-glare function

The system's infrared image will not be affected by light changes, thus reducing the impact of glare and sudden changes in light on the driver during the driving, and solving the problems of glare from oncoming vehicles at night and sudden changes in light when entering and exiting tunnels.



Function of penetrating fog, haze and dust

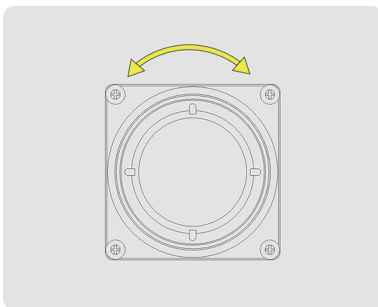
The system's infrared images can still be clearly formed in heavy fog, mist, haze, and dust weather, which improves the driver's driving vision in severe weather conditions.



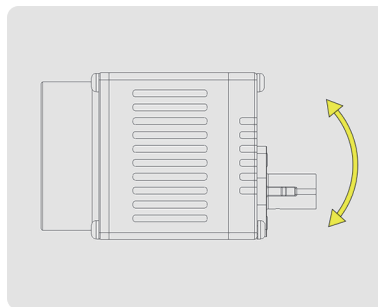
Installation Instructions

In order to ensure your normal use of the product, we advise you to make careful reference to the following installation schemes before using the product;

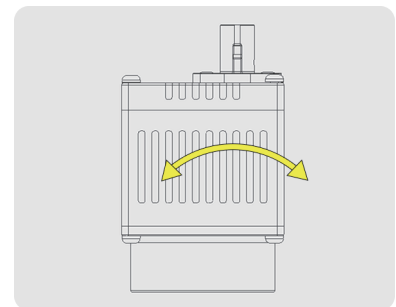
- 01 Design the mounting bracket according to the actual situation of your vehicle;
- 02 It is recommended to install the infrared camera at a suitable position on the front grille of your vehicle and as far away from the radiator and speaker as possible;
- 03 Stent manufacturing process requires deviation to be $<1^\circ$;
- 04 The infrared camera installation height range is between 40 and 120 cm (depending on the vehicle height);
- 05 See the figure below for specific installation angle requirements (depending on actual conditions);



Roll angle error $<3^\circ$



Pitch direction error $<3^\circ$



Yaw direction error $<3^\circ$

Common Troubleshooting

01 No video image

- Check whether the power cord is securely connected
- Check whether the video cable is securely connected

02 Image has "lines" or ghosting

Check to see if the image is frozen or if you hear a "click" sound from the vehicle-mounted thermal imaging camera. If you do not see the image freezing or hear the "click" sound (it may take several minutes to appear), the built-in shutter of the thermal imager may be faulty and should be repaired by an authorized repair center.

03 Image jittering

Check your mounting bracket to make sure it is securely installed.

04 Dim image

Check whether your video cable is connected reliably. If it is damaged, please contact the supplier or consult our company for repair advice.

Routine Operation and Maintenance

To improve and ensure, to the maximum extent, your safe driving experience and ensure that this system can provide you with high-quality assisted driving services, please be sure to follow the following instructions:

- 01 To improve and ensure, to the maximum extent, your safe driving experience and ensure that this system can provide you with high-quality assisted driving services, please be sure to follow the following instructions:
- 02 When using this product, please ensure that the system works within the specified voltage and operating temperature range. Do not frequently turn the machine on and off. The time interval between shutting down and restarting should be no less than 30 seconds.
- 03 To enhance the imaging quality, the surface of the lens of this system is coated with an anti-reflection film. Please do not touch the lens surface directly with your hands. The acidic substances left by fingerprints will damage the coating and lens surface. Please use a special lens cloth or glasses cloth to wipe the lens when cleaning is required.

Friendly Reminder

The vehicle-mounted infrared thermal imaging camera is of fully sealed waterproof design. Please do not disassemble the product by yourself. Any damage or destroy of the product caused by arbitrary disassembly will not be covered in the scope of warranty of the Company. In case of failure of the machine, please promptly contact the supplier or our company for repair advice.



One-stop service worry-free throughout the process

The professional after-sales service team adheres to the concept of "Night vision has no boundaries, service is worry-free", continuously innovating the service model and enhancing professionalism, providing customers with more professional, convenient and efficient service experiences.



Quick Response Satisfaction Directly Achieved

To better serve our customers, we implement the 8137 rapid response policy. We respond within 8 hours of the request, provide a preliminary analysis within 1 working day, offer an effective solution within 3 working days, and complete the repair within 7 working days to ensure customer satisfaction.



VEHIR Premium Selection Quality Guaranteed

We strictly control the product quality and always provide customers with 100% genuine original factory parts, ensuring that the quality and functions are consistent with those of the original products, thus making customers feel more at ease and assured.

WUHAN XUANYUAN IDRIVE TECHNOLOGY CO.,LTD.

✉ marketing@xy-idrive.com 🌐 www.xy-idrive.com

Sales hotline After-sales hotline
027-81298436 **027-81298772**

📍 No.6, Huanglongshan South Road, East Lake High-tech Development Zone, Wuhan City, Hubei Province