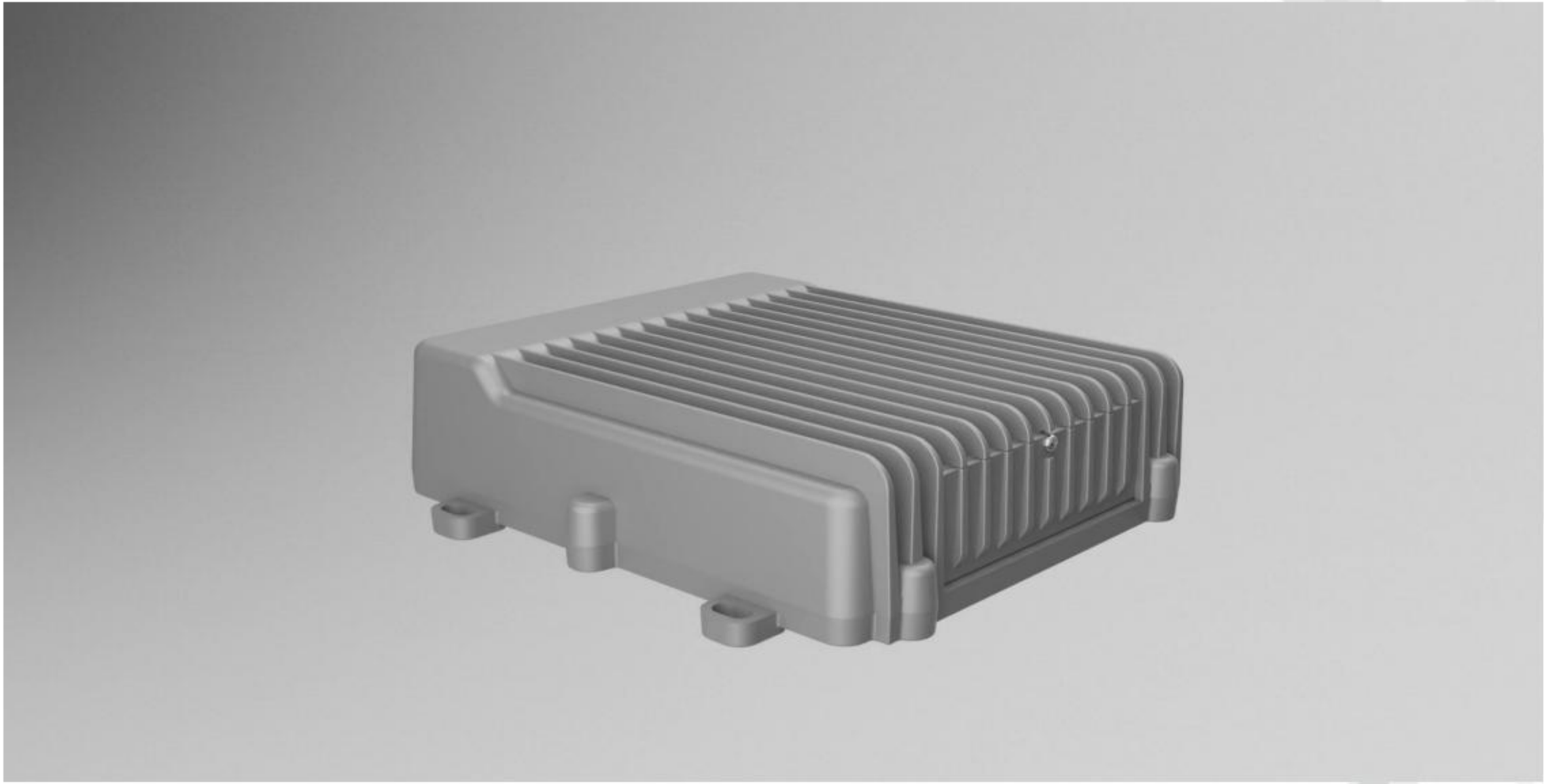
In-Car Intelligent Terminal Host-TD310/TD320



In-Car Intelligent Terminal Host-TD310/TD320

Product Design Specifications

① Software design complies with

※ GB/T 8410-2006 Flammability of Automotive Interior Materials

※ GB/T 34660-2017 Road Vehicles - Requirements and Test Methods of Electromagnetic Compatibility

※ GB/T 28046-2011 Road Vehicles - Environmental Conditions and Testing for Electrical and Electronic Equipment

※ GB/T 21437-2021 Road Vehicles —Electrical Disturbances from Conduction and Coupling

※ GB/T 19951-2019 Road Vehicles—Disturbances Test methods for Electrical/Electronic Component from Electrostatic Discharge

※ GB/T 33014-2016 Road Vehicles - Component Test Methods for Electrical/Electronic Disturbances from Narrowband Radiated Electromagnetic Energy

※ GB/T 18655-2018 Vehicles, Boats and Internal Combustion Engines—Radio Disturbance Characteristics—Limits and Methods of Measurement for the Protection of On-board Receivers

※ E_ECE_R10.05 Uniform provisions concerning the approval of vehicles with regard to electromagnetic compatibility

② Software design complies with

※ GB/T 26773-2011 Intelligent Transport Systems.Lane Departure Warning Systems.Performance Requirements and Test Procedures

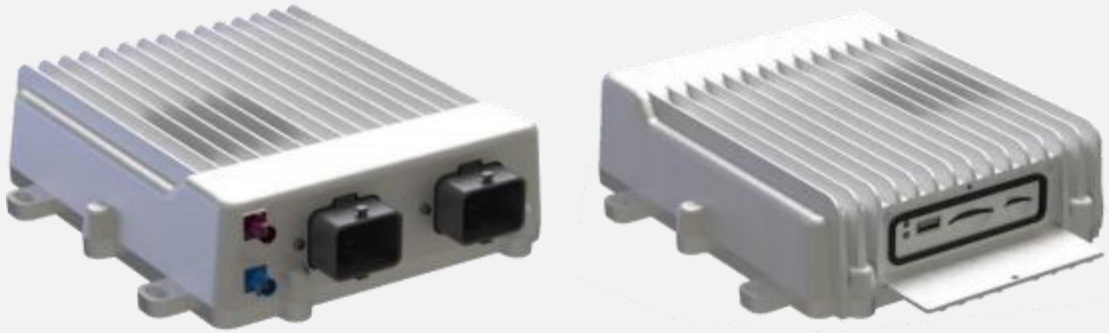
※ GB/T 33577-2017 Intelligent Transportation Systems—Forward Vehicle Collision Warning Systems—Performance Requirements and Test Procedures

※ GB/T 38186-2019 Performance Requirements and Rest Methods for Advanced Emergency Braking

※ GB/T 41796-2022 Performance Requirements and Test Methods for Lane Keeping Assist System of Commercial Vehicles

※ JT/T XXX-2021 Commercial Vehicle around View System Technical Requirements and Test Methods

In-Car Intelligent Terminal Host-TD310/TD320



TD310/320 represents a line of car models specifically designed for construction machinery vehicles. These models seamlessly integrate active safety and video monitoring features.

Powered by a high-speed processor and embedded operating system, coupled with cutting-edge algorithms, video technology, and mobile network connectivity, it delivers functionalities including DMS, BSD, AVM, recording of driving data, and wireless data transmission. The comprehensive suite of features enables effective remote monitoring, management, and data analysis, ensuring the safety of vehicle operations.

Main Features

DMS	Detects driver fatigue, distraction, and risky behaviors.
BSD	Identifies pedestrians and obstacles in the Front , left, and right blind spots.
FaceID	Recognizes the driver's identity.
AVM	Provides 3-way, 4-way, or 6-way AVM.

Product Highlights

Alarm Interface	Supports one-touch triggering of emergency alarms.
Video Output	Offers CVBS/VGA/AHD, 1080P/720P RTSP video stream output.
Video Storage	Enables video recording and event video storage.
Reserved Interfaces	Includes RS232, RS485, Ethernet, USB, ISD card slot, SIM card slot, and more.
Platform Supervision	Supports event video uploads, blind spot retransmission, and real-time voice intercom with the backend.
Various Sensor Interfaces	Compatible with sensors such as seatbelt sensors and radar.

Basic Parameters

Operating Voltage	9-36V	Operating Humidity	10%-95%RH
Operating Temperature	-40。-85。C	Storage Temperature	-40。-105。C
Casing Material	Die-cast Aluminum	Protection Level	IP66K
Maximum Power	48W	Device Dimensions(mm)	204×190×54mm (including connector size)
Communication Network	Supports seven-mode full-network communication	Standard Storage	Supports HDD and SD card storage, up to 2TB

Hardware Features

Supports a maximum of 8 camera inputs

4G+GPS/BD dual-mode

SD card + hard disk storage

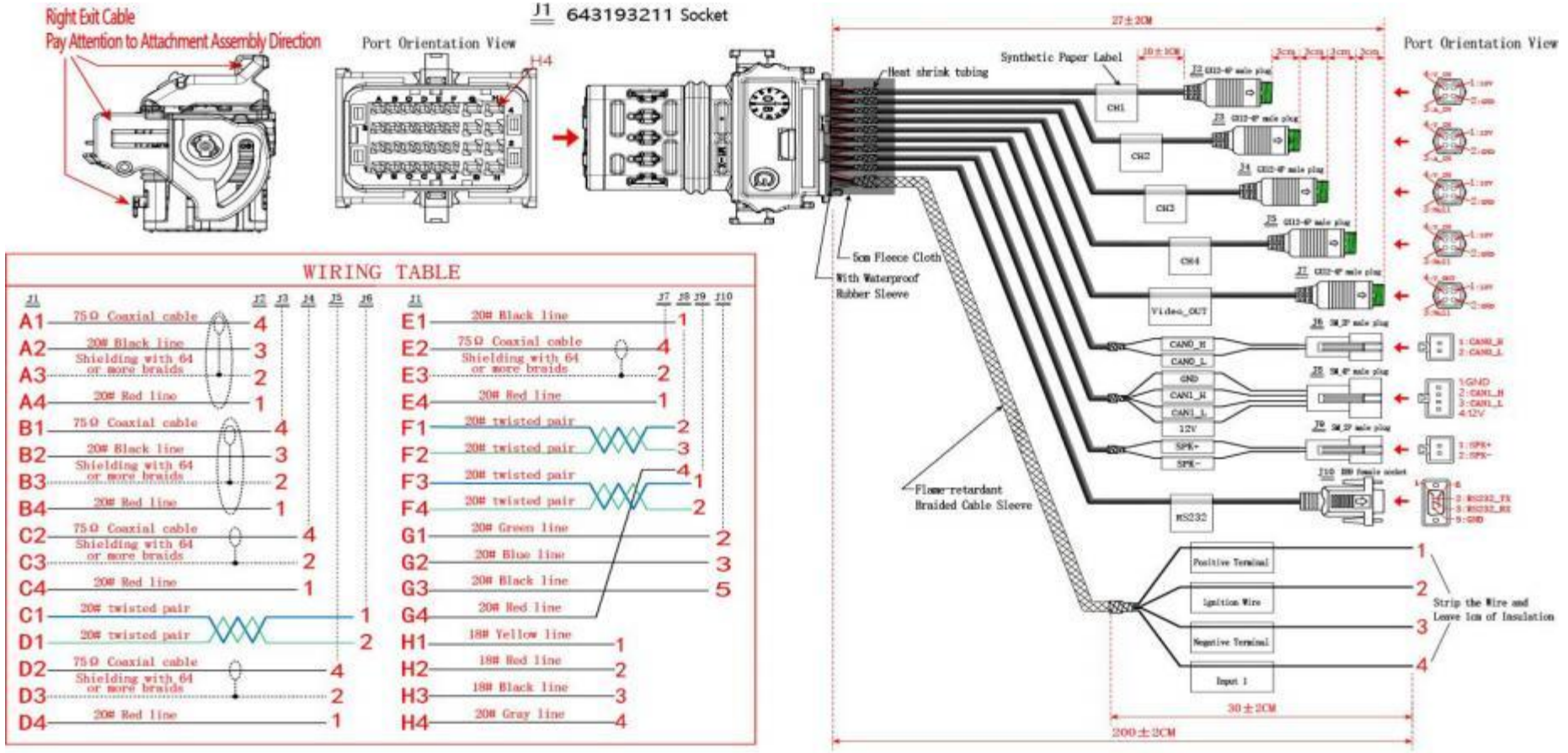
TD320-Basic Product Parameters

Category	Subclass	Item	Specification
Dimensions	Apperance	Dimensions	204× 190×54mm(including connectors)
	Material	Enclosure Material	Die-cast Aluminum
	Mounting Method	Mounting Method	Screw Mounting
Electrical Performance	Voltage	Standard Voltage	24V
		Operating Voltage Range	9~36V
	Current	Operating Current	≤0.7A (at 24V DC, with 4 AHD inputs)
		Maximum Current	2A (at 24V DC, with 8 AHD inputs)
		Dark Current	< 3mA
	Power	Rated Power	16W (may vary with peripheral devices connected)
		Maximum Power	48W
Environmental Characteristics	Temperature	Operating Temperature	-40°C~85°C
		Storage Temperature	-40°C~85°C
	Humidity	Operating Humidity	10%~95%RH
	Protection Rating	Waterproof and Dustproof	IP66K (Dustproof, Waterproof with High-pressure Cleaning)

TD320-Product Configuration

Category	Item	Specification	Category	Item	Specification
SOC Chip	CPU	4×A53 ARM Cores	**Upgrade**	Upgrade Method	USB Drive/SD Card
	NPU	1.2T	**Expansion Ports**	USB Ports	Front panel, used for connecting an external mouse
MCU Chip	SRAM	96K		Ethernet	1×10/100M Ethernet (For Debug Only)
	Flash	256K		RS232	1×RS232(Used for prompter)
Storage	RAM	2GB DDR4(support for up to 4GB)		CAN0	CAN 2.0, default without 120Ω resistor
	ROM	8GB eMMC		CAN1	CAN 2.0, default without 120Ω resistor
	SD Card	Support for 1 standard SD card (optional)		Auxiliary Input Positive	7×Auxiliary Input Positive
	Hard Drive	M.2 SSD (support for up to 2TB, optional)		Auxiliary Input Negative	1×Auxiliary Input Negative
Video	Video Input	8×AHD, 12V	**IO Ports**	Auxiliary Input Positive	1×Auxiliary Input Positive

TD320-Patch Cord Interface Instructions



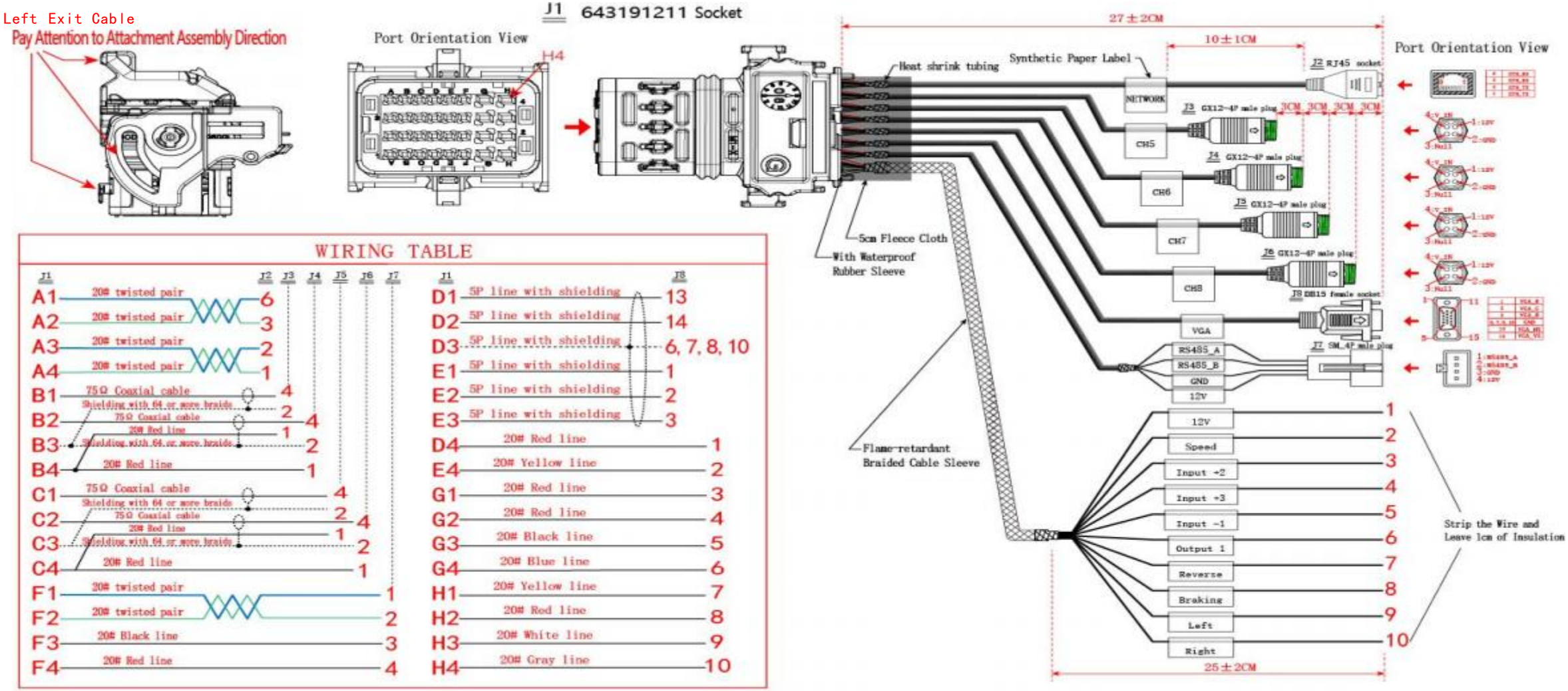
接口一功能介绍

Camera输入	4路
视频输出	1路（AHD/CVBS）
CAN	2路
SPK喇叭接口	1路
RS 232	1路
电源接口	1路

接口二功能介绍

网口	1路
Camera输入	4路
视频输出	1路（VGA）
RS 485	1路
车速信号 转向灯信号 制动信号 倒车信号	1路

TD320-Patch Cord Interface Instructions



WIRING TABLE

J1		J2	J3	J4	J5	J6	J7
A1	20# twisted pair	6					
A2	20# twisted pair	3					
A3	20# twisted pair	2					
A4	20# twisted pair	1					
B1	75Ω Coaxial cable			4			
B2	75Ω Coaxial cable			2			
B3	20# Red line			1			
B4	20# Red line						
C1	75Ω Coaxial cable				4		
C2	75Ω Coaxial cable				2		
C3	20# Red line				1		
C4	20# Red line						
F1	20# twisted pair						1
F2	20# twisted pair						2
F3	20# Black line						3
F4	20# Red line						4

J1		J8
D1	5P line with shielding	13
D2	5P line with shielding	14
D3	5P line with shielding	6, 7, 8, 10
E1	5P line with shielding	1
E2	5P line with shielding	2
E3	5P line with shielding	3
D4	20# Red line	1
E4	20# Yellow line	2
G1	20# Red line	3
G2	20# Red line	4
G3	20# Black line	5
G4	20# Blue line	6
H1	20# Yellow line	7
H2	20# Red line	8
H3	20# White line	9
H4	20# Gray line	10

The product is Suitable for Various Types of Construction Machinery Vehicles

The product can be flexibly adapted to different types of construction machinery vehicles. It offers BSD solutions with 1-3 cameras for small and heavy machinery and AVM solutions with 3-6 cameras for medium to heavy machinery.

Forklifts/Industrial Vehicles

Excavators

Loaders

Port Machinery

Concrete Mixers

Large Cranes

Forklift Active Safety Product Solution

- **Installation of Forklift Active Safety Monitoring Kit**

AI BOX

3-Way BSD or 4-Way AVM Cameras

DMS camera

Seat Belt Sensor (Optional)

Smart Display Screen (Optional)

- **Forklift Active Safety Monitoring Kit Deployment Process**

Device Installation

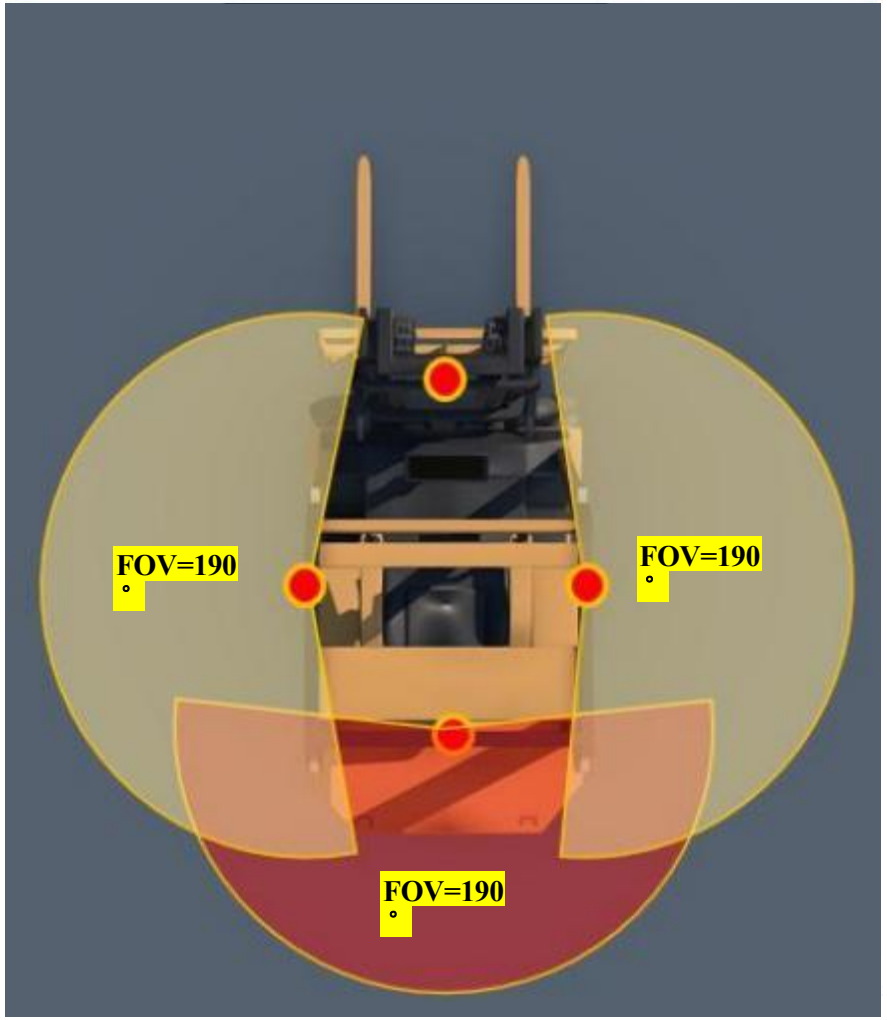
Mobile Calibration

Kit Operation

Installation of AVM+BSD Cameras - 3-Way

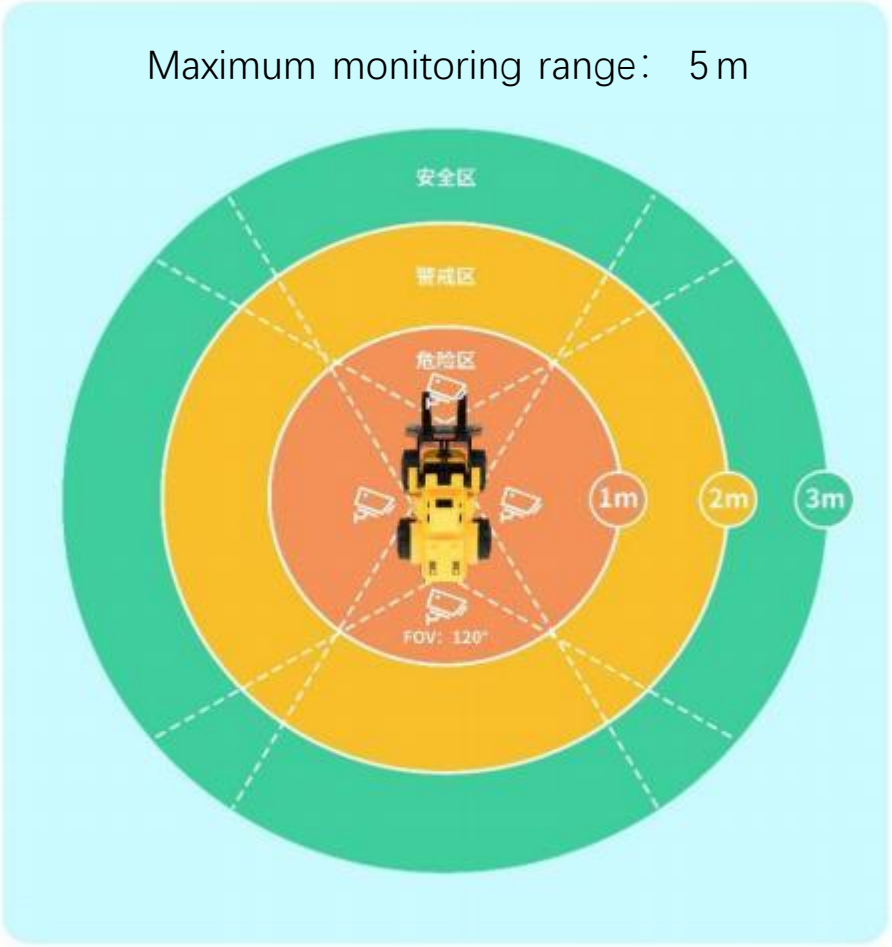
- Installation of three cameras -- with two in the Front and one in the rear.

Coverage Area

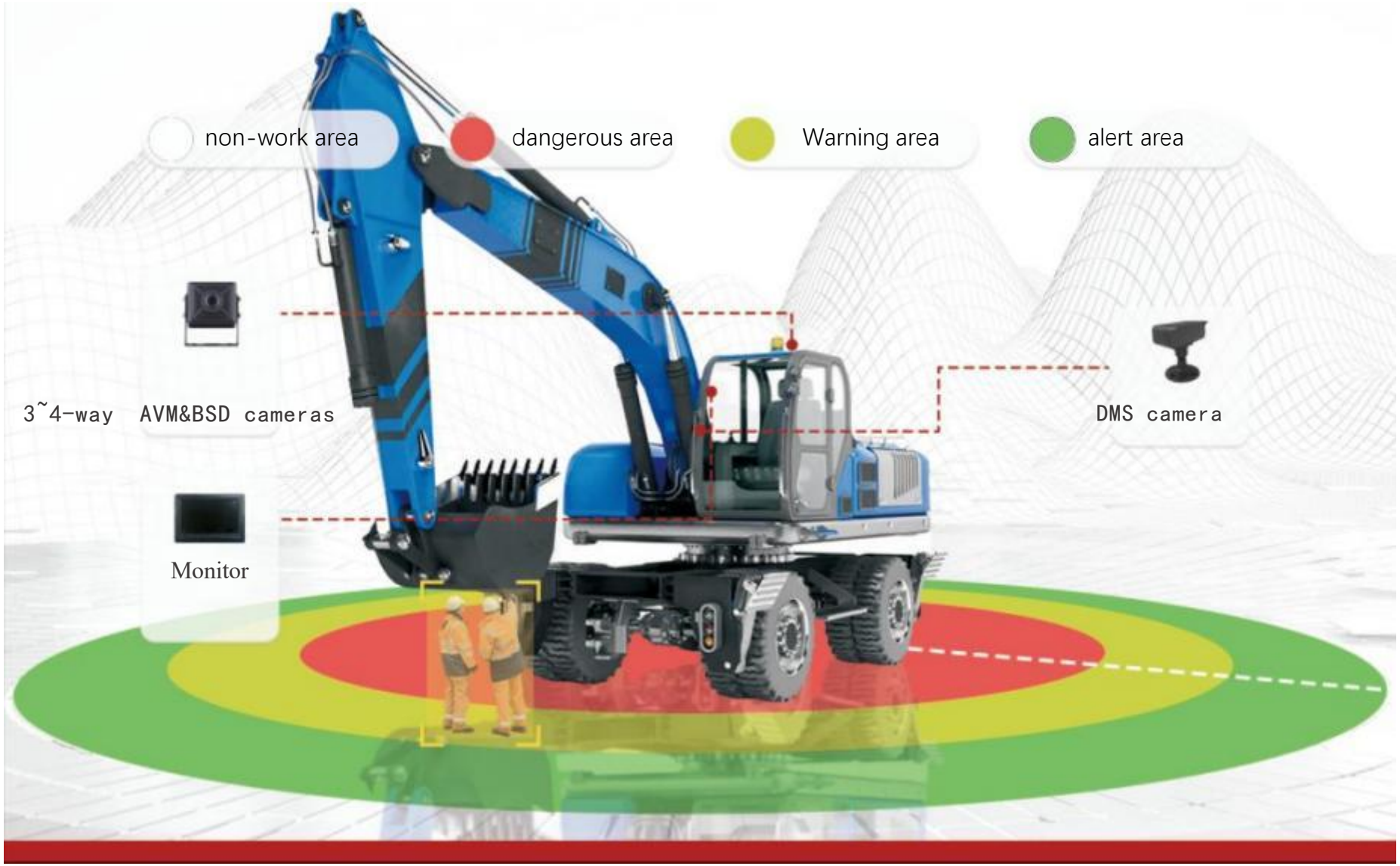


Installation of 4-Way Blind Spot Detection (BSD) Cameras

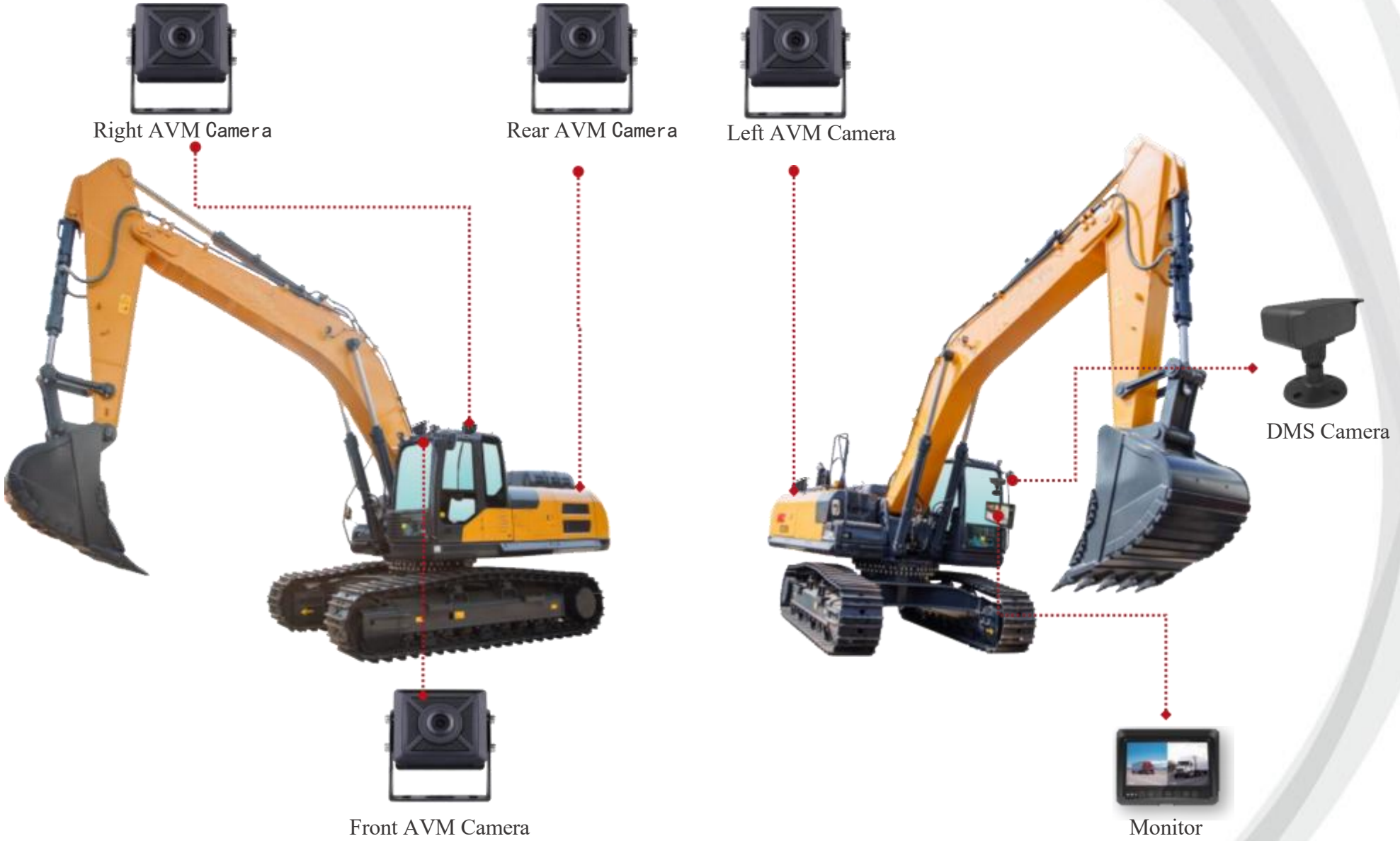
- Installation of four cameras, one for each direction -- Front , Rear, Left, and Right.



Construction Machinery Solutions



Excavator


Right AVM Camera
Rear AVM Camera
Left AVM Camera
DMS Camera
Front AVM Camera
Monitor

Wheel loader

Port machinery

Right AVM Camera

Left AVM Camera

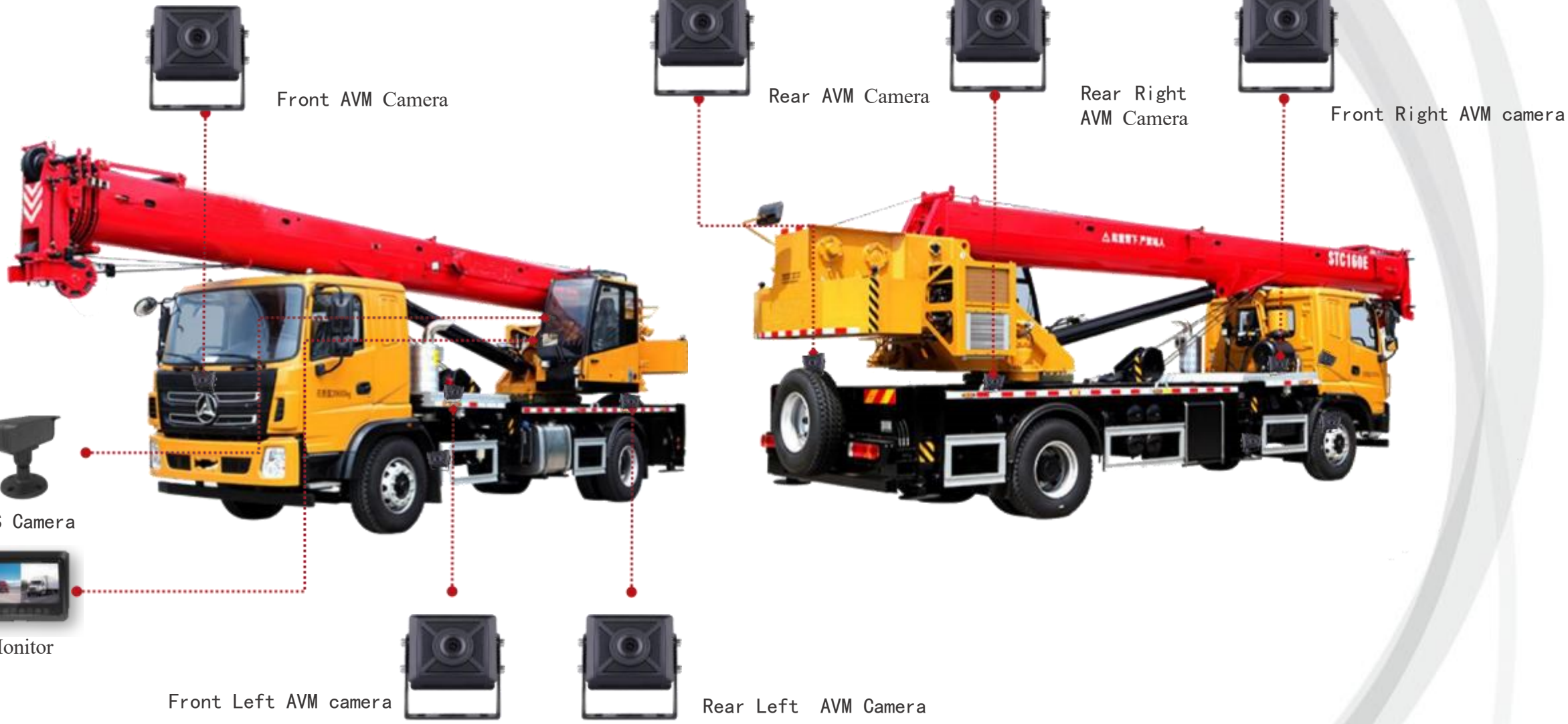
Rear AVM Camera

DMS Camera

Monitor

Front AVM Camera

Crane


Front AVM Camera
Rear AVM Camera
Rear Right
AVM Camera
Front Right AVM camera
DMS Camera
Monitor
Front Left AVM camera
Rear Left AVM Camera

Forklift 4-way AVM System Real Vehicle Test Results

Application Scenario: Forklifts Used in Factory Warehouses

AVM Solution: 4-way AVM + BSD Blind Spot Warning

ArcSoft collaborates with leading forklift manufacturers in Hangzhou to provide a comprehensive AVM solution coupled with BSD blind spot warning. Forklifts are primarily utilized in various industrial settings like factories, mines, warehouses, and ports, where ensuring the safety of personnel, vehicles, and cargo is paramount. With ArcSoft's AVM and BSD blind spot warning solution, we effectively eliminate blind spots and provide thorough monitoring of pedestrians and obstacles in the vicinity, enhancing the safety of workers during operations.

4-way AVM (Around View Monitor) System for heavy construction equipment - Experimental effectiveness

4-way AVM (Around View Monitor) System for excavators - Experimental effectiveness

Crane installation examples

6-Way AVM (Around View Monitor) with BSD (Blind Spot Detection) for cranes.

TD320 Camera Specifications BSD Camera

1 . Basic Specification

Lens optical performance

Item	Specification
Focal length	2.8mm
Optical focus	5mm
Mechanical focus	4.7mm
TTL	20mm
Aperture	F2.2
Optical mechanism	4G
HFOV	120
VFOV	68
DFOV	135
Optical Distortion	33%
CRA	16°

Connector PIN definition

1	Positive power
2	GND
3	Empty
4	Video

Sensor type & specifications

Item	Specification
Device	1/2.8" SONY (IMX307)
Signal system	PAL
Effective pixels	1280(H) × 720(V)Approx. 2.16M pixels
Frame rate	720(25fps)
Synchronization system	Internal synchronization
Minimum illumination	0.001Lux@(F1.2, AGC ON) , 0LUX with IR
White balance	Auto white balance
Electronic shutter	AUTO
Exposure mode	Global shutter
Filter switch	External infrared light switching control
Video output	1280*720 AHD-BNC
Operating voltage	DC12V
Infrared distance	0-15m
Operating temperature	-20℃ ~ +80℃

Electrical performance

Item	Specification
Output format	MIPI 10bit
Frame rate	30 fps
ISP type	FH8550M
Connector	Aerospace standard connector
Voltage	DC 12V
Current	150-200mA

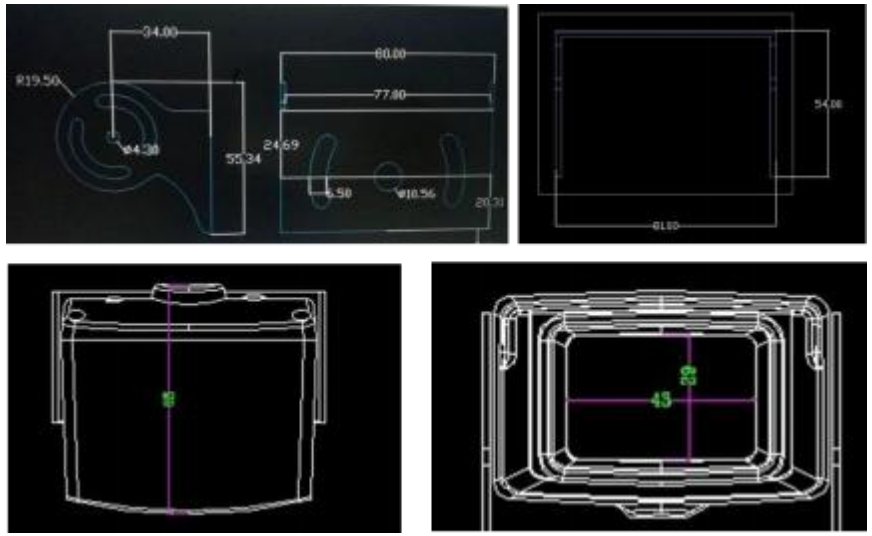
TD320 Camera Specifications BSD Camera

2. Module parameters

Reliability

Item	Specification
Memory temperature	-20℃~80℃
Operating temperature	-20℃~60℃
High-temperature and high-humidity memory	Temperature: 45℃ Humidity: 95%
Electrostatic test	4KV
Protection level	IP67
Drop test	Free fall from a height of 1.5 meters to concrete ground

Product mechanism



Development parameters

Item	Test criteria
Module analysis resolution	Center: 1000LW/PH 0.8 Field of View : 600 LW/PH
HDR	120dB
Focal length	2.8mm
Depth of field	1m ~ ∞

TD320 Camera Specifications AVM Camera

1 . Specification

Item	Specification
Sensor	GC2053
Sensor type	200W CMOS Sensor
Pixel size	2.8um*2.8um
CMOS	1 /2.9”
Lens	6G+1RF
Focal length	1.4mm
Aperture	F1.8
Metal lens mount	M12xP0.5
Field of view angle	D=220° H=220° V=136°
Image model	RGB
Dynamic range	81dB
Resolution	1280*720P
Output signal	AHD
Compatible video formats	P-made
Frame rate	25fps
Operating voltage	VCC12V
Current	50mA
Power consumption	0.6W
Operating environmental temperature	-20° C- +70° C
Memory temperature	-25° C- +80° C
Cable	0.6 m

2 . Photograph of the actual product

TD320 Camera Specifications DMS Camera

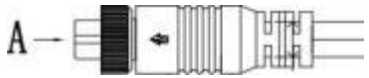
1 . Basic Specifications

Lens optical performance

Item	Specification
Focal length	3.6mm
Optical focus	6.241mm
Mechanical focus	6.1mm
TTL	22.3mm
Mechanical focus	F2.2
Optical mechanism	4G
HFOV	68°
VFOV	53°
DFOV	85°
Optical Distortion	-25.00%
CRA	12.4°

Connector Pin Definition

1	Power supply 12V
2	GND+MIC-
3	MIC+
4	AHD



SENSOR type & specifications

Item	Specification
Type	JX-H65
Resolution	1280*720
Size	1/3"

Electrical performance

Item	Specification	Note
Output format	PAL	
Frame rate	25fps	
ISP type	FH8536H	
Connector	2P/3P	
Voltage (MAX, MIN)	12V	Rating
Current (MAX, MIN)	105mA (+/-5%)	
MIC	Available	

TD320 Camera Specifications DMS Camera

2. Module parameters

Reliabil it

Item	Test condition	Test criteria
Memory temperature	-25℃~80℃	Normal development, analysis resolution fluctuation ≤10%
Operating temperature	-20℃~65℃	Normal development, analysis resolution fluctuation ≤10%
High-temperature and high-humidity memory	Temperature: 80℃ Humidity: 85%	Normal development, analysis resolution fluctuation ≤10%
Electrostatic test	Contact discharge: ±4KV; Air discharge: ±8KV	Normal development
Drop test	Free fall from a height of 1.5 meters to concrete ground.	Normal development

Development parameters

Item	Test criteria
Module analysis resolution	Center MTF50: 500 LW/PH 0.8 Field of View MTF50: 350 LW/PH
Luma shading	1.0 FOV Attenuation: <35%
Partical	No white spot
HDR	70.4dB
Dark corner	None
Depth of field	Focus distance: 0.8m Depth of field: 0.3m

Product mechanism & appearance