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Solan Safety Systems

AI Butterfly Product Manual

AIB-4

SOLAN Systems

Directory:

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Product Introduction:

Product overview

AI butterfly is an intelligent safety aid designed specifically for forklift operators. It uses advanced AI technology to monitor and warn drivers of unsafe behaviour and the system is able to monitor people around the forklift in real time. When a danger is detected, the system sends out an immediate alert.

AI Machine Standard Parameters

Working Voltage	DC12~24V
Rated Power	36~48W
Operation Temperature	-30°C~70°C
Waterproof and Dustproof Rating of the Host	IP66K (Dust tight, water-resistant)
	Resolution: 1280X720P
DMS Camera	Image Mode: Black and White Image
BSD Camera (Four Routes)	Resolution: Supports 1080P/720P AHD
	Image Mode: Color Image
	≤120±5DB
Speaker Volume	100db Yellow Red
Two-Color Lights	Waterproof and Dustproof Rating: IP65

Product Introduction:

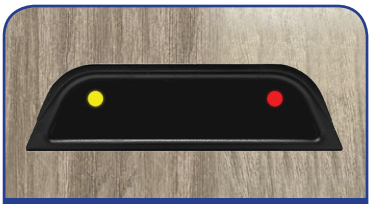
List of Host Accessories

TD320 Host X 1

7-inch AHD screen X 1

DMS Camera X 1

BSD Camera X 4



Two-Color Lights X 1

Speaker X 1

GPS Antenna /
4G Antenna X 1

Signal Bus X 1

Memory and
Data Card X 1

Wireless WiFi Head X 1

Power Bus X 1

Camera
Extension Cable X 1

Product Introduction:

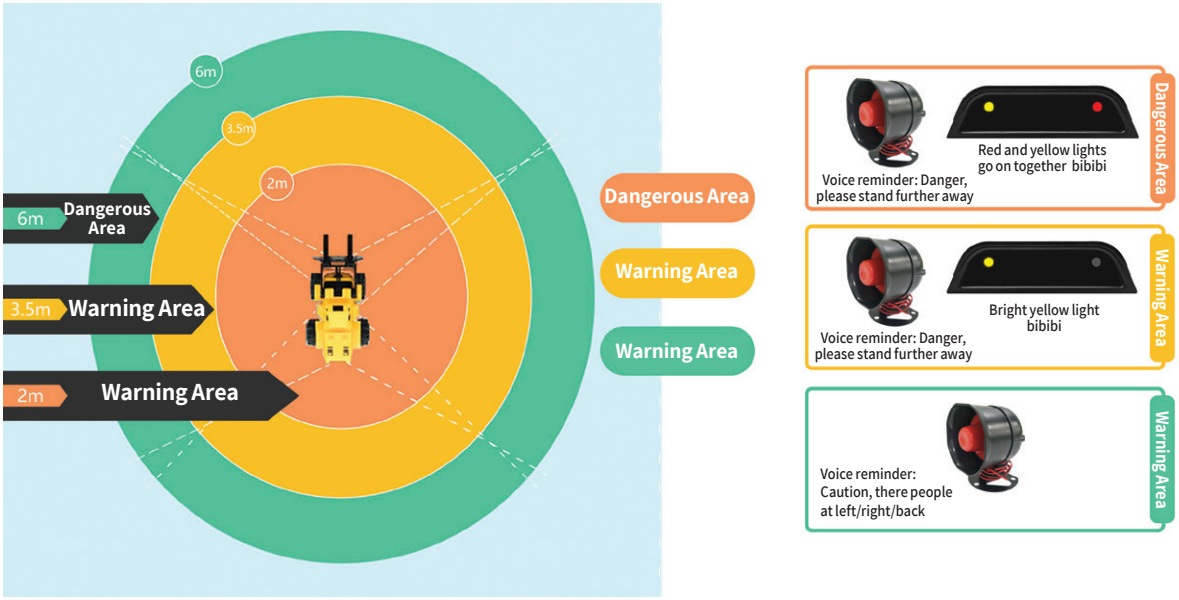
Function description

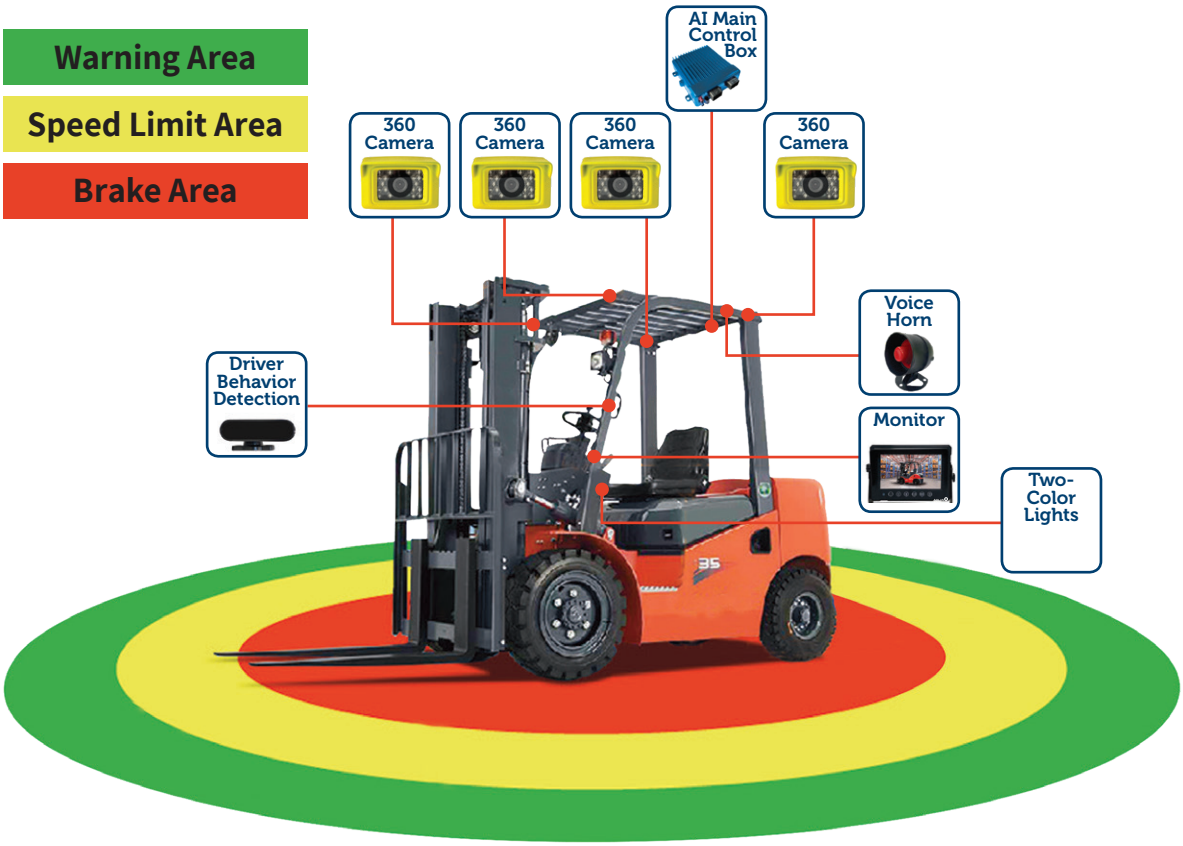
Standard function	Function Description
Four channel video monitoring	**At level 1:** Pedestrians enter into the set green range, voice reminding. **At level 2:** Pedestrian enters into the set yellow area, voice reminding, dual-color alarm light turns on yellow and “beep beep beep” sound. **At level 3:** Pedestrian enters the set red zone, voice alert, dual-color alarm light yellow and red light on at the same time, and emit“beep beep beep” sound.
Intelligent anti-collision warning	When a person is detected in the perimeter alarm range, it will alert the driver and the neighborhood of the approaching forklift by voice.
Intelligent anti-collision regulation	Three levels of warning distances can be set through the device settings and mobile apps.
Real-time video monitoring management	The video display shows real-time content and cuts the screen to alert the driver when a person enters the perimeter, and the real-time image data can be transmitted to the backend to view the real-time image of the forklift through the platform.
Driver behaviour detection	When the driver is recognized as smoking, making a telephone call, distracted movement, fatigued driving, and other violations, the voice alarm reminds the driver, records the event, and uploads the data to the platform.

Function	Function Description
Facial recognition	Identify and compare facial data information, and monitor in real-time using AI algorithms.
Positioning trajectory playback	By real-time positioning of the vehicle’s current location information and speed data, and recording the uploaded data.
Real time video surveillance	Real time transmission of images to the platform, allowing administrators to view lens images in real-time.

Product Introduction:

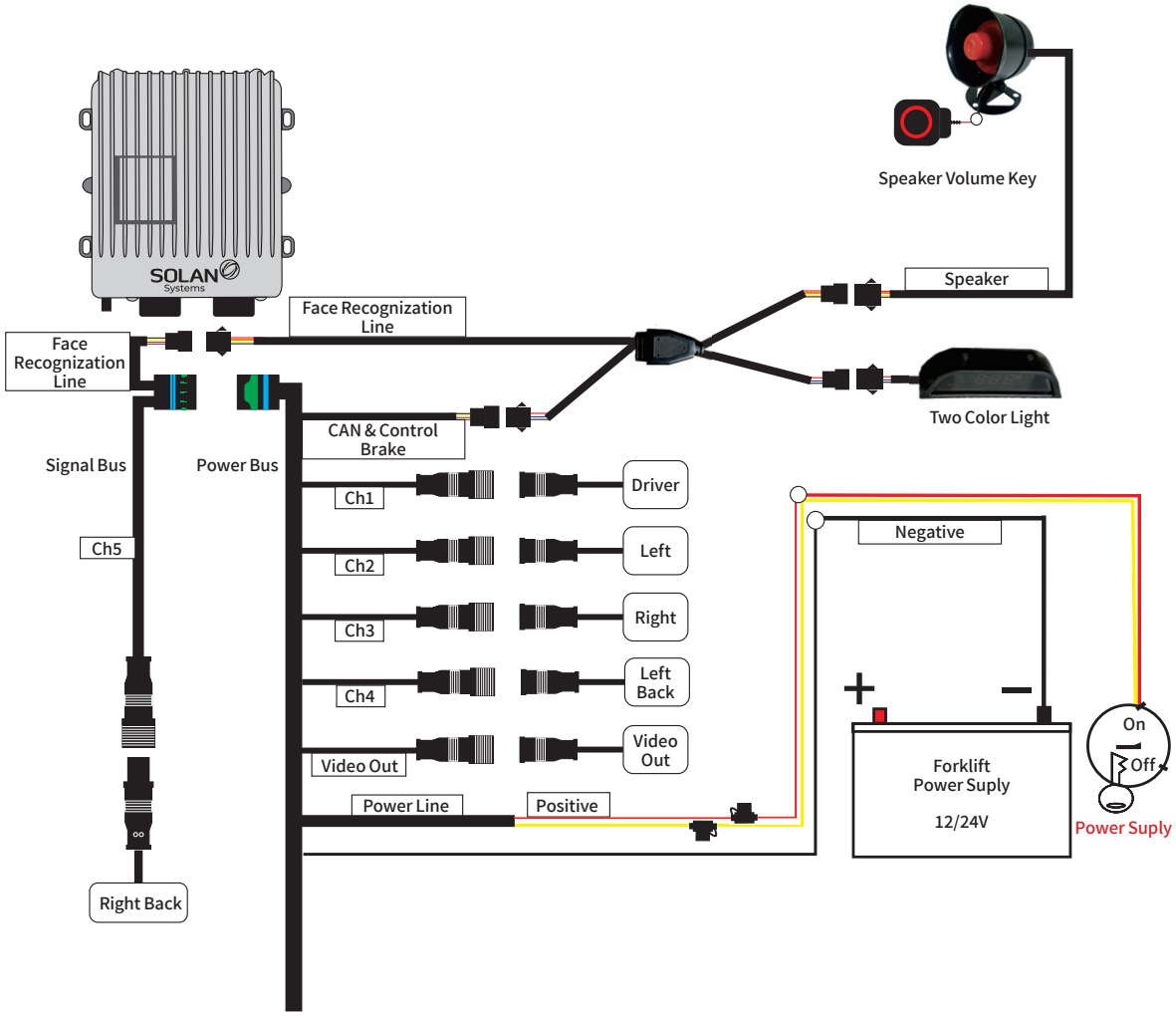
Schematic diagram of three-level light control alarm detection





Installation example

Forklift AI Anti Collision System Wiring Diagram



Caution:

Electric current consumption

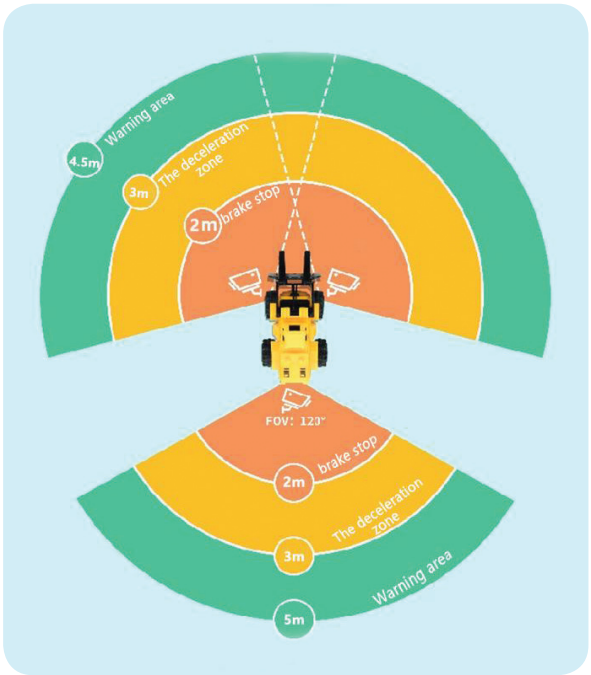
1. If the forklift power supply exceeds 24V, use a converter power supply for the transfer.
2. The main power supply and the red wire of the AI control box are connected together to the positive terminal of the 12/24V power supply. The black wires are connected together to the negative side of the power supply.

Operation and Maintenance Tools Usage Tutorials

Adjusting the Camera Installation Angle

The basic angle is around 45 degrees from the horizontal, and the captured image should cover the main blind spots in front of the car. The outline of the car's front should appear as a reference line in the image to prevent blind spot leakage, as shown in the following figure.

Schematic Diagram of Camera Coverage Detection Range



Operation and Maintenance Tools Usage Tutorials

Installation of Mobile App

Android Mobile Installation“Operation and Maintenance Tools” APP

Figure 1: Application QR Code

Figure 2: APP icon

Attention: TD320 calibration operation and maintenance APP is compatible with device operating system Android 5.0 and above.

Device Connect

The device connection method is described as follows:
Step1: Insert the USB to WiFi adapter into the device, with the interface located on the front panel as shown in Figure 5.3. If the adapter is recognized, the device will emit a voice prompt saying ‘Algorithm activated’.

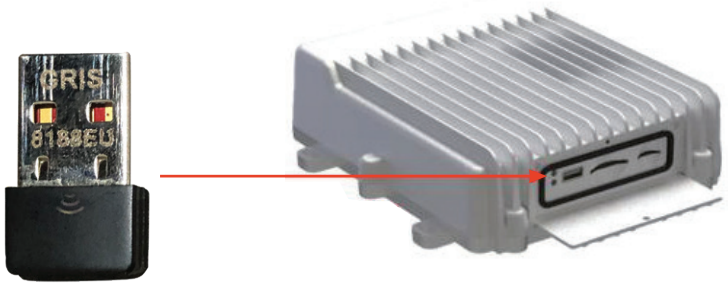


Figure 3: Wifi header Insert Host USB

Step2: Search for the WiFi name “GA-XXXXXX” or “TD310-XXXXXX” on your phone, and connect to this WiFi with the password 00092311
Step3: Open the “Calibration Terminal” app, enter your username, password, terminal IP, and port number as follows, and click the login button, as shown in Figure 5.4.

Operation and Maintenance Tools Usage Tutorials

Enter the APP login interface (no need to change the account password), click:

user name: admin
password: admin
Terminal IP:
http://192.168.90.1
Port number: 6733

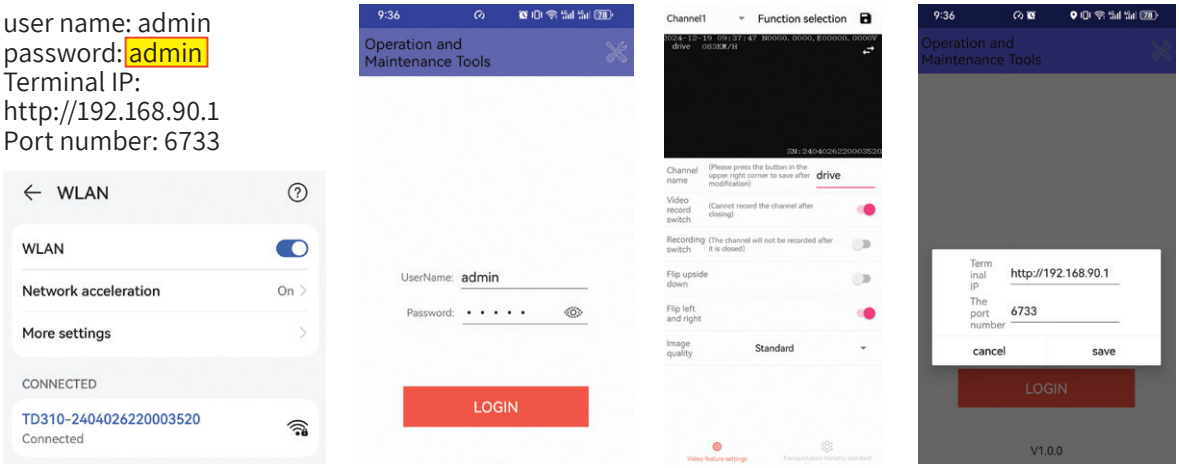


Figure 4: Schematic diagram of APP login

Interface Preview and Calibration

BSD Screen Preview

Click the arrow in the upper right corner, select “Channel 3”, and then click ▼ the button to preview the real-time screen of that channel.
Channel 2: letf, Channel 3: right, Channel 4: fornt, Channel 5: back.

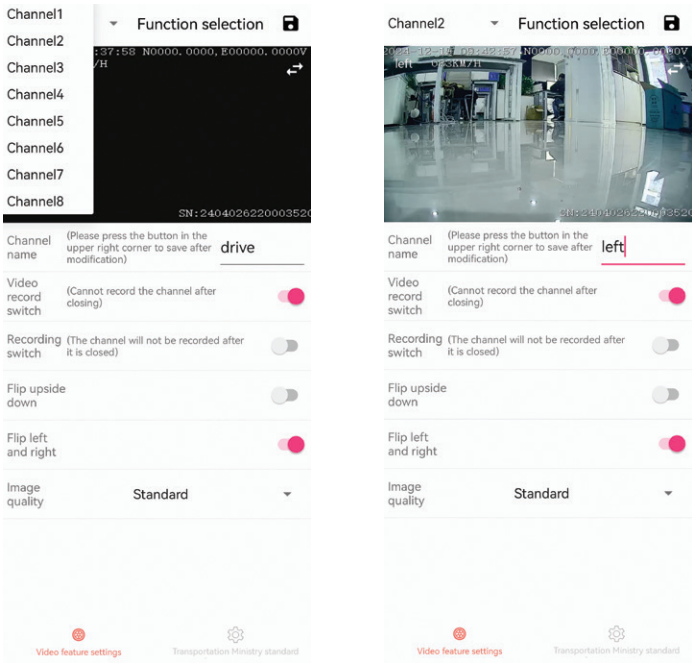


Figure 5: Schematic diagram of BSD screen preview

Operation and Maintenance Tools Usage Tutorials

Green Line: Voice Alert.
Yellow line: voice alert, control forklift speed.
Red line: voice reminder, control forklift brake.
Black line: pedestrians appear in the black line, execute the function.

Each line needs to recognize the pedestrian's toe in order to execute the function.

BSD calibration

Click the screen button to switch to the BSD calibration interface.
Adjust the calibration lines (red/yellow/green) corresponding to BSD based on the installation location of the camera and the actual needs of the customer's alarm area.
The vehicle contour line is the boundary line for non reporting distinction, and the alarm area is divided based on the vehicle body as a reference.

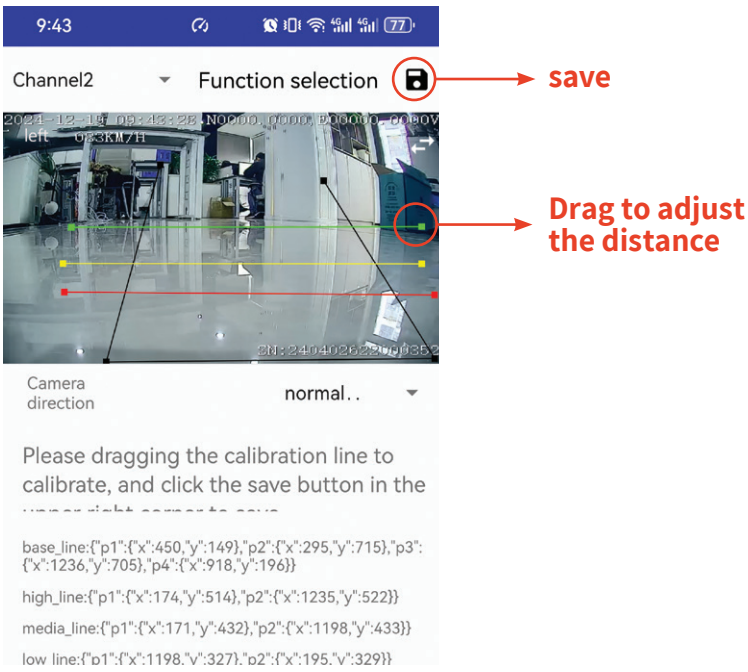


Figure 6: BSD Calibration Diagram

Common problem explanation

Q: How to view software version information in the device?
A: Connect the device to the mouse, right-click and select “About this machine”, then click “Version information” to see the software version information of the device.

Q: How to solve the problem if the upgrade cannot be completed offline?
A: There are currently two upgrade methods:
1. **Offline upgrade:** storing upgrade files on a USB flash drive, inserting the USB flash drive into the device to complete the upgrade;
2. **Online upgrade:** Upgrade through URL address on the customer platform or operation and maintenance platform. If the upgrade cannot be completed offline, an online upgrade can be performed.

Q: How to solve the problem of failed registration of driver identity authentication photos?
A: Registration failure is usually caused by the image size not meeting the requirements or the image format not meeting the requirements. The image can be cropped appropriately. Ensure that the image is 16 times wider, even in height, and in jpg format. Suggest using vertical images for facial registration photos.

Q: How to solve the problem that the DMS active security single parameter ‘Enable - On/Off’ cannot be set?
A: Connect the device to the mouse, right-click, click on “Active Security”, and then click on “Next Page”. This interface allows for batch setting of DMS sub functions.

Q: How to solve the prompt “responsiveEvent errcode-1, type=2 8” when saving after BSD calibration?
A: Confirm whether the channel is configured with the corresponding algorithm on the device side. If it is not configured, it needs to be manually configured, saved, and recalibrated.

Q: How to solve the problem of “IP or port number error, please check network connection” when logging in to the calibration app for the first time?
A: Click the button in the upper right corner, save the parameters, and return to the login page to log in again.