LonRock In-Vehicle Recognizer Product Manual

LonRock In-Vehicle Recognizer is an edge AI computing device designed to analyze video feeds from IP cameras, identify targets, match target movements, and analyze target trajectories (such as counting targets). This device can adjust trajectory analysis directions (e.g., cross-line counting, trajectory judgment) based on project requirements.

The LonRock In-Vehicle Recognizer connects to a IP camera via the ONVIF protocol, supporting one camera at a time. It can identify over 60 targets simultaneously. The device operates on a 5V/3A power supply with a power consumption below 15W.

LonRock In-Vehicle Recognizer is designed for mobile or vehicle-mounted scenarios:
Supports GPS positioning, enabling location playback on map.
Equipped with built-in storage for stable operation in vibrating environments.
Dimensions: 115x75x35 mm; weight: ~400g.

Appearance:

Size Comparison with a Hard Drive

Accessories

Includes a TYPE-C 5V/3A power adapter and a USB satellite positioning module.

Camera Requirements

The LonRock Recognizer connects to IP cameras via Ethernet, requiring:
Support for ONVIF protocol.
Video encoding in H.264 or H.265.
Compatibility with resolutions ranging from 720P to 5MP.
Performance Note:
Lower resolutions (e.g., 1080P, 720P) with shorter exposure times yield better recognition accuracy, especially in low-light conditions (e.g., dawn or dusk). For vehicle applications, prioritize cameras with good light sensitivity at 1080P or 720P.

Satellite Positioning Module Requirements

Protocol: NMEA 0183, baud rate 9600, supports GPS/BeiDou dual-mode.
Interface: USB-only due to housing design constraints.

Operating Instructions

1. Preparation
Ensure the camera and Recognizer are on the same subnet.

2. Startup
Connect the 5V/3A power supply.
Link the Recognizer to an ONVIF-compatible IP camera via ETH1.
The device automatically searches for or connects to the specified camera if both devices are on the **same subnet**.
Note: If the Recognizer and the IP camera are not on the same subnet, please connect a laptop to the Recognizer via Ethernet and manually adjust the IP address settings to ensure proper communication.

3. Indicator Lights
Small Indicators:
Red (Power): Solid on when powered.
Green (System Status): Blinks during normal operation.

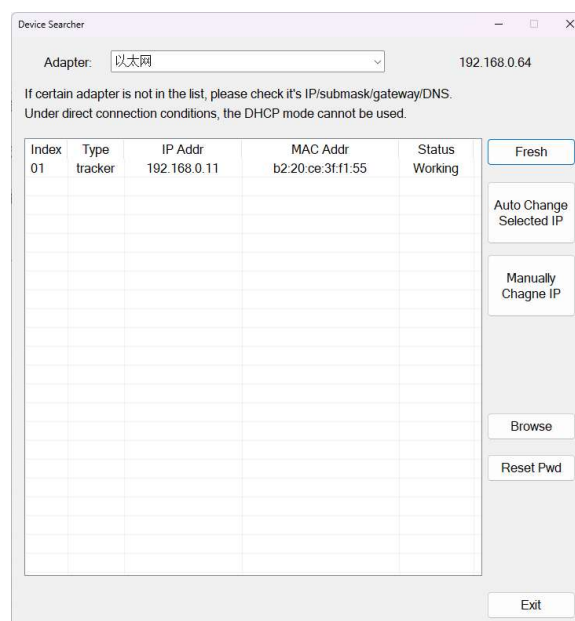*Large Indicators:*
Left (Target Detection): Lights up for ~15s when a new target enters the frame.
Right (Data Input):
Blinks "5s on, 1s off" when receiving camera video.
Blinks "2s on, 1s off" when also receiving satellite data.

4. Management

Connect to the Recognizer using a Windows PC and configure its IP address via the device discovery tool.

Access the web interface by entering the Recognizer's IP in a browser.

Key Web Interface Features:

- Target recognition settings.
- Live video display.
- Device parameter adjustments.
- Playback of recognized targets and statistics.

5. Network Configuration

ETH0 (Management Port): 192.168.0.6.

ETH1 (Camera Port): 192.168.1.66.

Note: Assign ETH0 and ETH1 to different subnets if modifying IPs.

Windows Software

1. Device Discovery Tool

- The Recognizer PC Discovery Tool allows users to search for and modify the IP addresses of Recognizer.
- If the PC has multiple network connections, please select the network interface connected to the Recognizer under the "Adapter" section at the top.
- This tool does not automatically detect changes in device connections. If a new device is connected, click the "Fresh" button to re-scan the network.
- The Recognizer is operated via a web browser. User can double-click an entry in the device list to open the login page in browser, or select an entry and click the "Browse" button to access the login interface.
- If you forget the browser login password for the Recognizer, click the "Reset Pwd" button to restore it to the factory default password: **123456**.

GUI of the LonRock Recognizer Discovery Tool

2. Playback Software

The LonRock In-Vehicle Recognizer PC Playback Software is a Windows-based adaptation of the web playback functionality found in the vehicle version of the LonRock Recognizer. It enables users to efficiently search and manage recognition data through three viewing modes, data management tools, video playback, and statistical analysis.

Unlike the web playback interface, the PC playback software replaces the project dataset list on the left with a folder selection feature. The selected folder must be one that was backed up from the LonRock Recognizer or a direct copy with identical contents. Only then can the software correctly display the data based on the folder contents.

For more details, please refer to the Web Playback Guide.

Web Interface Overview

To operate the LonRock Recognizer, log in to the device by entering its IP address in a web browser. Once logged in, the top menu includes four main sections:

- Recognition Management (default landing page after login): Select the type of object to be recognized.
- Config: Allows users to adjust internal parameters of the Recognizer.
- Preview: Displays the live video feed from the connected IP camera along with its IP address.
- Playback: Enables review of previously recognized target data.

There are three playback views: Map View, List View, and Invalid GPS Coordinates. By default, the system opens in Map View, displaying the Recognizer's location at the time of recognition (a satellite positioning module must be connected for location data).

In the lower-right corner of the playback page, three information panels are available:

- Event Information
- General Statistics
- Detection Category

Web Playback Details

Project List (Left Panel)

Clicking on an item in the left-hand project list will display its associated recognition data points in the view on the right.

When the "Cannot Delete" option is selected for a project, its data will be preserved even when the storage device reaches full capacity and the system begins automatically deleting the oldest data.

Data Display Views

(1) Map View

- Displays the recognized target locations on a map.
- Clicking a marker on the map opens a detailed information panel below and allows playback of a video clip approximately 15 seconds before and after the event.
- Note: Data points with invalid location information (latitude and longitude both equal to 0) will not appear on the map.

(2) List View

- Displays recognized targets in chronological order.

- Clicking an entry shows detailed information and enables video playback for that specific recognition event.

- Note: Data with invalid location information (latitude and longitude both equal to 0) will not appear in this list.

(3) Invalid Coordinates

- Displays only data entries with invalid GPS information (latitude & longitude both equal to 0).

- These entries are not shown in the Map View or List View.

Note: Each view displays up to 10 records at a time. Use the "Previous" and "Next " buttons to navigate through additional data.

Information Panel (Bottom Right Corner)

(1) Event Information (default)

- When a map marker or list item is selected, detailed information about the event is shown below.

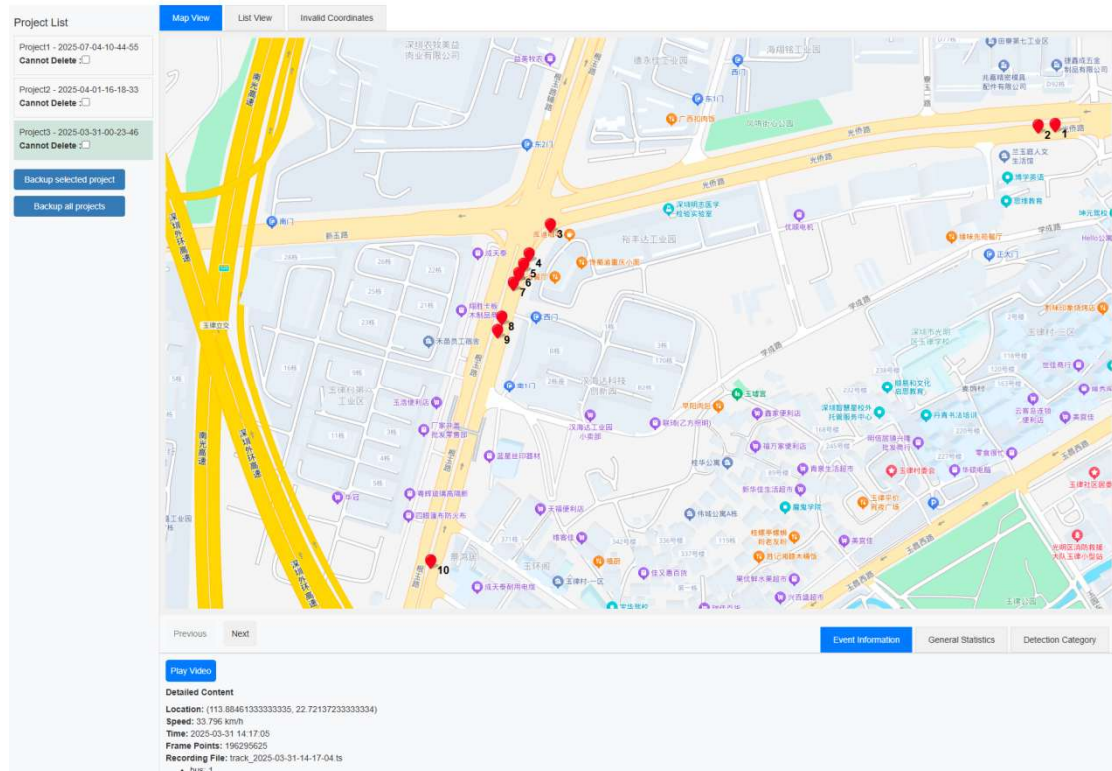- Click the "Play" button to view a short video clip of the recognition moment.

(2) General Statistics

- Displays the total number of recognized targets in the current project (not limited to those currently visible).

(3) Detection Category

- Shows the types of objects that were recognized in the current project.

Playback GUI with Map View Enabled

Other Key Features of the Web Interface

● Assigning the IP Address of the Camera:

By default, the LonRock Recognizer connects to the first IP camera it automatically detects. In the "Peripheral Management" section of the Configuration page, you can manually specify the IP address of the desired camera.

● Model Replacement and Firmware Upgrade:

Unless necessary, it is not recommended to change the recognition model or upgrade firmware. In the "System Information" section of the Config page, you can check the cloud server for available models and switch the recognition target model.

By default, the LonRock Recognizer comes with a general-purpose recognition model (common v102) capable of identifying over a dozen target types. An industrial safety helmet model (hhat v201) is also available on the cloud server, which can detect whether a person is wearing a safety helmet.

Note: This feature requires the Recognizer to be connected to the internet.

● Device Reboot and Shutdown:

In the "Factory Reset" section of the Configuration page, there are options to reboot or shut down the device.

Troubleshooting (FAQ)

Q: Why does the playback video from the Recognizer seem like it's playing in fast motion?

A: The LonRock Recognizer focuses on object detection and tracking within video streams, and then composes output video based on recognized frames. Since the input frame rate of the IP camera is not fixed—typically 20–30 FPS in good lighting, and sometimes below 10 FPS in poor lighting—the resulting playback frame rate also varies. This may create the impression of fast motion or uneven playback. In short, the Recognizer prioritizes recognition and statistical accuracy over exact video timing, while ensuring system stability.

Q: The Recognizer is working normally, but I can't find it using the PC Discovery tool. Why?

A: If you're sure the LonRock Recognizer is functioning properly, but the PC or laptop can't find it using the discovery tool, please check the following:

1. Ensure that the network selected at the top of the detection tool matches the network used by the Recognizer. Also check if the IP address of your PC appears on the same row.

Laptops often have multiple active network interfaces (e.g., Wi-Fi and Ethernet). If the selected interface is not on the same subnet as the Recognizer, it won't be discovered.

Additionally, if the selected interface does not have an IP address assigned, the device cannot be found. In that case, assign a static IP address to your PC manually.

2. If the network includes a firewall or if the router has built-in security filtering, it may block either the broadcast command from the detection tool or the Recognizer's response.

In this case, try connecting your PC directly to the Recognizer or switch to a network without firewalls.

3. Make sure your PC is on the same subnet as the Recognizer's ETH0 port, which is required for discovery.

Q: How can I modify the IP address of the ETH1 port on a In-Vehicle Recognizer using the device discovery tool?
A: The PC detection tool can only discover and modify the IP address of the ETH0 port. To change the ETH1 IP address, you must log in to the Recognizer's web interface and modify it from the Configuration page.

Q: Why can I access the Recognizer's web interface in a browser, but the device discovery tool can't find the device?
A: This is likely due to a firewall on the router within the local network. It may block broadcast commands from the detection tool, while standard HTTP browser traffic is still allowed.
Additionally, if your PC is connected to the ETH1 port on a In-Vehicle Recognizer, the device will not be discoverable by the detection tool. This is because ETH0 is the management interface, and the detection tool only sends broadcast commands through ETH0.

Q: My camera supports ONVIF and uses H.264/H.265, but the Recognizer doesn't display any image. Why?
A: Even if your IP camera supports ONVIF and uses H.264/H.265, you need to ensure that the camera and the Recognizer are on the same subnet.
For example, if the camera's IP address is 192.168.1.108, the Recognizer's corresponding port should also use an IP like 192.168.1.xxx.
Another possibility is that the IP address of the ElderWatching device conflicts with the IP address of another device on the local network, which can cause data transmission issues.

Q: What if I forget the login password for the Recognizer?
A: You can use the **Recognizer's discovery tool** to search for the device, then click "Reset Pwd" button to restore the password to the factory default: 123456.

Q: How can I tell if the GPS module is connected successfully to the Recognizer?
A: First, ensure that a camera feed is already connected to the Recognizer—this is required for the GPS module to function.
The Recognizer has two large indicator LEDs. The right LED shows whether peripherals like the camera or GPS module are connected:
- If only the camera is connected, the LED flashes 5 seconds on, 1 second off.
- If both the camera and GPS module are connected, the LED flashes more rapidly: 2 seconds on, 1 second off.