EC0 9 AI Intelligent Transportation Terminal instructions

EC09 AI Intelligent Transportation Terminal Introduction

Ⅰ. Product Introduction

This device is primarily designed for applications such as utility poles and tunnels along urban arterial roads, general roads, and highway sides. It can integrate with various front-end devices on the road—including cameras, access control cameras, dome cameras, radar systems, pan-tilt units, environmental monitoring equipment, and display panels—to enable intelligent operation and maintenance management. The system ensures stable power supply and network connectivity for monitoring and data collection devices, promptly detects equipment failures, automatically triggers alarms, and reports incidents to the central platform. These features help prevent and reduce traffic accidents while improving traffic flow efficiency.

Ⅱ. Feature Highlights

- ✧ Made of die-cast aluminum alloy with a thickness of ≥2.5 mm, featuring a powder-sanding finish. The housing offers electromagnetic interference resistance, dust and moisture protection, waterproofing, high-temperature tolerance, and corrosion resistance.
- ✧ Equipped with a built-in Beidou positioning module that supports automatic positioning and time synchronization services, featuring a one-click time calibration function for front-end

cameras in case of time discrepancies.

- ✧ The Linux system features reserved dynamic environment interfaces, allowing for customized configuration as needed and enabling the transmission of front-end device information back to the platform.
- ✧ The modular design features card-insertion mechanisms for each functional board, facilitating maintenance.
- ✧ Supports multiple protocols including HTTP, RS232, RS485, RTSP/RTP, TCP/UDP, GB28181, ONVIF, SNMP, MQTT, Modbus-RTU/ASCII, TCP/IP, as well as Master and Slave configurations.
- ✧ Automatically adapts to universal IoT transmission protocols for rapid device connectivity;
- ✧ Supports multiple power output specifications including AC220V, DC12V, AC24V, and DC36V, enabling direct power supply to various equipment types along the route.

Power supply for sensing devices and control terminals, perfectly suited for scenarios with diverse power supply types and dispersed equipment on highways;

- ✧ Intelligent temperature control ensures continuous normal operation of the equipment under abnormal conditions;
- ✧ Supports 4G wireless network expansion, with dual-link network transmission capability.
- ✧ Supports the Bypass feature extension to maintain network connectivity during device failures or abnormal conditions, ensuring uninterrupted critical operations.
- ✧ Supports expanded SSD high-capacity storage to meet large-scale data storage requirements;
- ✧ It features a managed switch with support for remote management ports and monitoring via WEB, SSH, and TELNET.

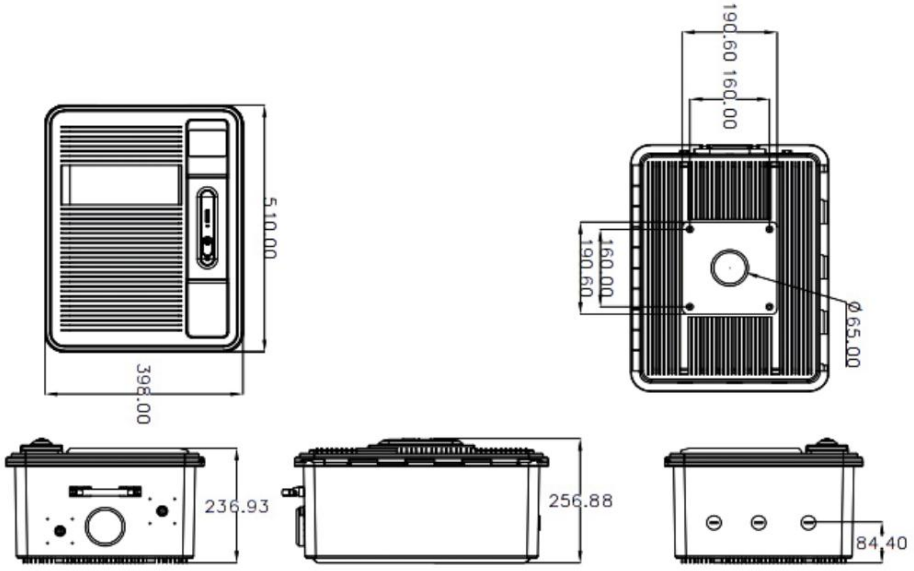
Ⅲ. Main parameter configuration:

name		Specification Description
box	Material, Size	manufactured using integrated die-cast aluminum alloy, it features rain and dust resistance, ventilation and heat dissipation, UV resistance (anti-aging), theft prevention, rust resistance (for high-humidity environments), acid and alkali corrosion resistance (for coastal areas), and electromagnetic interference resistance (anti-EMP for lightning protection).

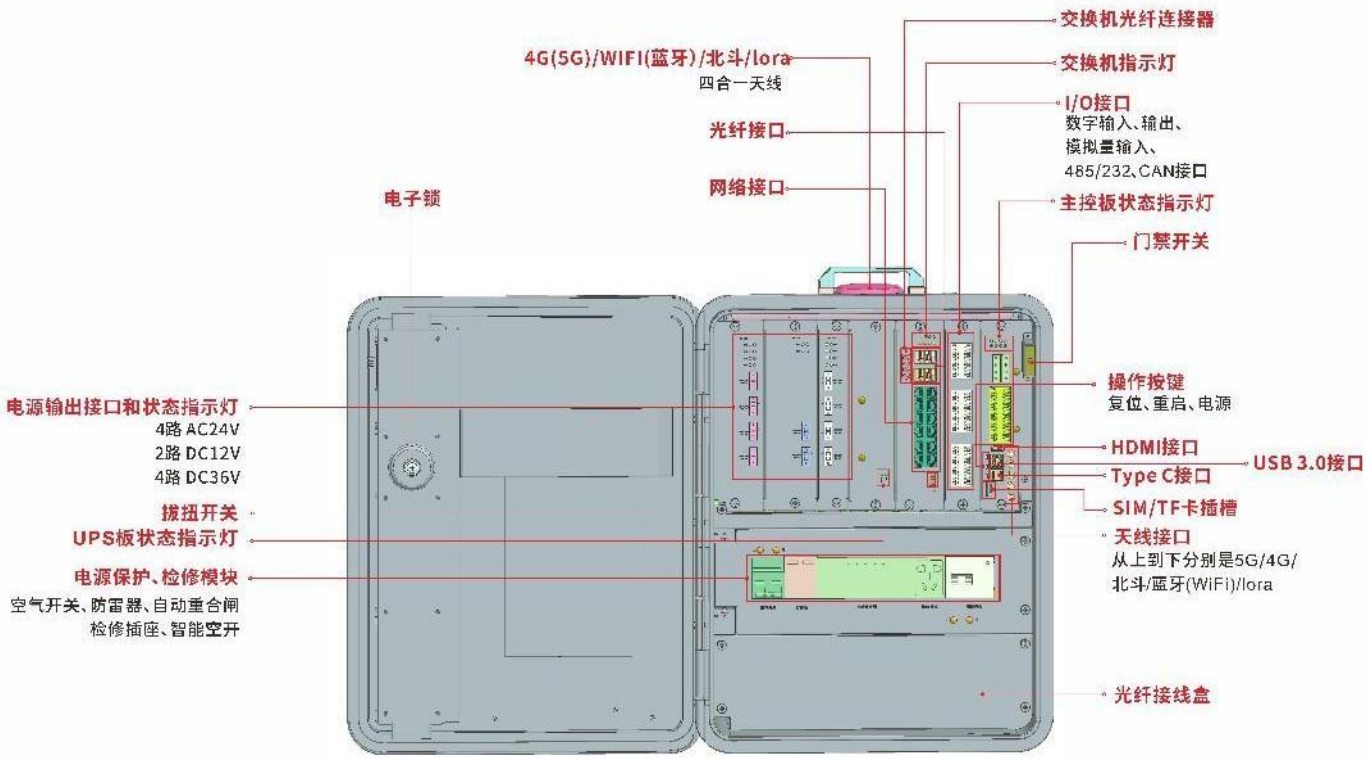
	way to install	Supports three mounting options: back flange fixation, clamp installation, and wall-mounted fixation; cable holes are reserved on the back and bottom.
	levels of protection	IP55/65
power input	input voltage	165-280VAC
environmental specification	working temperature	-40～+85°C
	working temperature	5% to 95% relative humidity (no condensation)
processor	processor	RK3576J octa-core
internal storage	internal storage	4GB LPDDR4/4X or LPDDR5/5X;
NPU		6TOPS；
eMMC	eMMC	32GB
master control	Interface	RS232 communication interface *2 RS485 communication interface *2 4-channel AI analog signal *4 DI*4 DO*4 TTL interface*1 CAN*1 USB 2.0 *1 USB 3.0*1 Type-C debugging port *1
operating system		Supports Linux embedded systems and Ubuntu
safe	Built-in encryption chip	With an integrated encryption chip, it provides comprehensive protection for network access security, network defense security, and data transmission security.
Highly Reliable		Link detection and embedded hardware/software watchdogs enable self-repair functionality for device operational failures.
wireless network	PDA	Supports low-power Bluetooth BLE 5.2
orientation system	Shandubao	Supports single-beidou dual-frequency positioning module
Built-in emergency power supply module	UPS supply electricity	The device must remain powered on for more than 22 seconds after power loss.

DC12V power supply output module		2 DC 12V (2A) channels per channel, supporting voltage and current detection as well as remote control.
AC24 Power Supply Output Module		2 AC 24V (8A) channels per channel, supporting voltage and current detection, and remote control.
air switch		2P rail-mounted circuit breaker, rated current 63A
Power surge protector		AC220V power supply with lightning protection and remote status monitoring support Nominal discharge current: 20 kA; Maximum discharge current: 40 kA; Maximum continuous operating voltage: 385 V; Rating voltage: 220 V; 2P DIN35mm standard rail mounting
autoreclose circuit breaker		The 63A automatic reclosing device supports remote closing and features overvoltage, undervoltage, leakage current, short-circuit, and overcurrent protection. It includes pre-power-on closing condition detection.
Power socket repair	AC 220V maintenance power supply output for Route 1	5-pin socket, rail-mounted installation, maximum current 10A
Smart Circuit Breaker		AC220V 63A, supporting status monitoring (including voltage, current, and energy consumption) and remote switching functionality, with protection features against short circuit, leakage current, overcurrent, overload, overheating, arcing (due to poor contact or insulation damage), overvoltage, and undervoltage.
Water Immersion Module		Water immersion sensor: The device automatically triggers an alarm upon detecting water immersion.
Temperature and Humidity Monitoring Module		Temperature and humidity sensor for real-time monitoring of internal temperature and humidity within the chamber
Automatic lighting fixture		The box is equipped with a lighting fixture that automatically illuminates upon opening and turns off when the door is closed.
Electronic lock		Planar lock, zinc alloy, with electronic control and NFC functionality

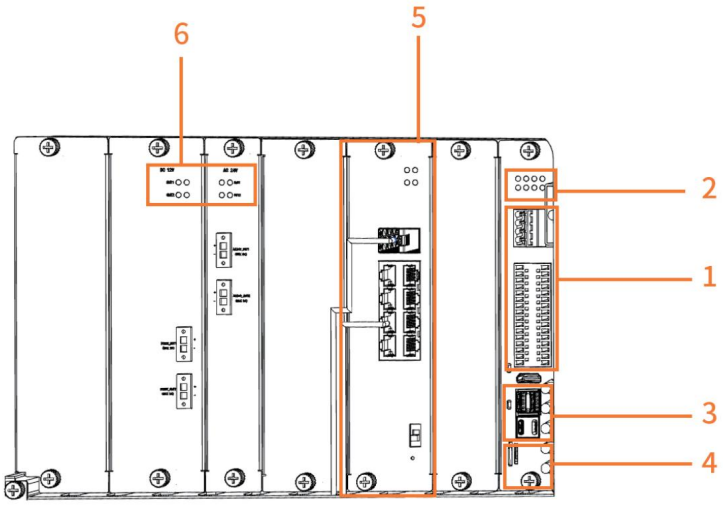
IV. product size



V . Description of the internal structure of the cabinet



VI. Detailed interface introduction:



order number	Module Name	module declaration
1	Dynamic Interface	The equipment has reserved interfaces for external dynamic environmental monitoring devices, with the 485 and 232 interfaces currently set to transparent mode.
2	Main control board status indicator light	The meanings of the indicator lights are as follows: • The SYS green light is on, indicating that the system is operating normally. • The green light on the SWITCH indicates that the switch is operating normally. • The green light on the PWR indicates that the system is receiving normal power supply.
3	USB interface	It includes 2 USB ports, 1 Type-C port, and 1 debug port.
4	SIM/TF card slot	You can insert a TF memory card and a SIM card as needed. • The TF card supports hot-swapping. It is used to store portrait images and video recordings. • The SIM card does not support hot-plugging. When the wired network is abnormal, enable the 4G/5G network and report the issue to ensure a stable connection.
5	exchange board	The switch interface includes 8 electrical ports and 2 optical ports. • Ports 1 through 8 are electrical ports, all featuring 100/1000 BaseT(X) adaptive RJ45 interfaces. • Nos. 9–10 are optical ports. • RESET Key: Long-press this key with a pointed object to restore the boards configuration to factory settings. A green light indicates a fully functional network connection.

6	Power output interface and status indicator light	The system includes 2 channels of 2A/12V DC, 2 channels of 8A/24V AC, 2 optional channels of 3A/36V DC, and 1 220V AC maintenance socket power output interface for powering external devices. The switch for each output voltage channel can be controlled via buttons. The different colors of the indicator light represent the following meanings: A green light indicates normal power output. A red light indicates that the power output is turned off. ● If the indicator light does not illuminate, it means there is no power input. ● By default, all outputs are set to the "off" state upon device delivery. Select the appropriate switch based on actual requirements. ● The rated power of 24VAC remains consistent, with a rated current of 8A. Pleaseexercise special caution when using it. ● Long-term operation at high temperatures under full load may reduce the products lifespan; it is recommended to use the device below 80% load.

VII. way to install

The device supports both flange installation and wall-mounted installation methods.

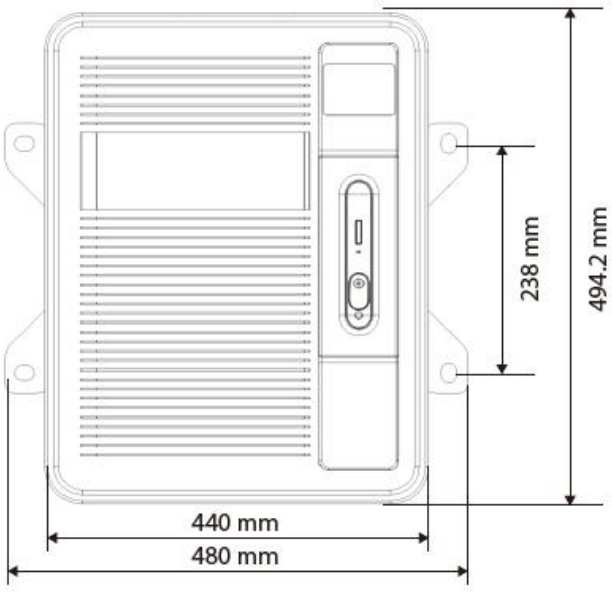
- Flange installation: Primarily used for installing utility poles along roadways.

Before installing the flange, a flange plate must be present on the vertical post, with the flange dimensions and hole spacing meeting 160 mm x 160 mm.

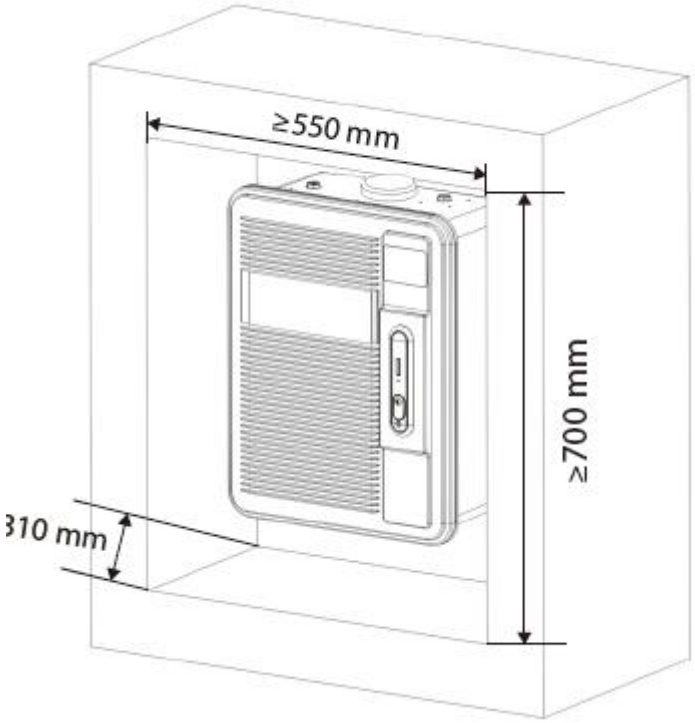
- Wall-mounted installation: Primarily used in scenarios such as railway stations, bus stations, and highway tunnels.

When performing wall-mounted installation inside a tunnel, the installation hole locations and tunnel dimensions must comply with the specified requirements.

Tunnel tunneling hole position (unit: mm [inch])



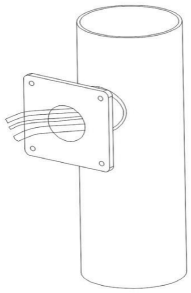
Tunnel borehole dimensions (unit: mm inch)



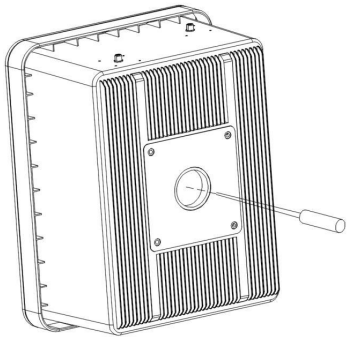
① Flange mounting

The device supports flange installation with rear cable entry.

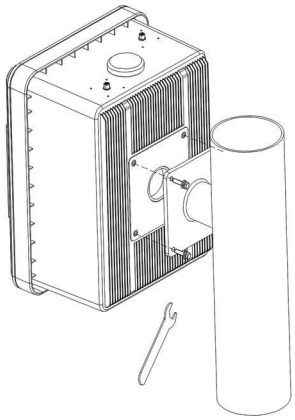
Step 1: Pull out the cable from the rod



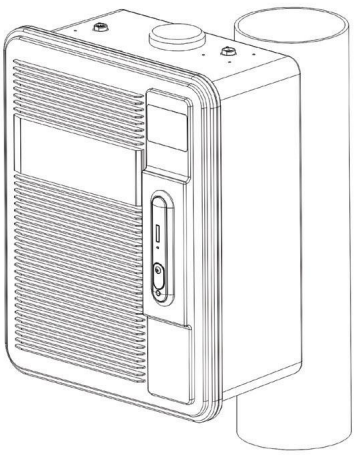
Step 2: Use a sharp tool (such as a screwdriver) to seal and break the back wire pass hole.



Step 3: Insert the cable through the cable passage hole on the back of the cabinet, then align the back mounting holes with the corresponding holes on the flange and angle iron, and tighten the screws using tools.



Step 4: Use a wrench to loosen the screws on the box door, then unscrew the electronic lock in the direction indicated by the arrow (a mechanical key is required for the first time opening the box).



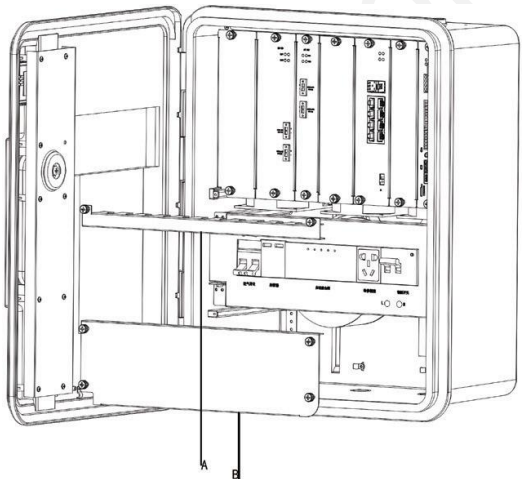
Step 5: Connect internal wiring

For the first use, connect the ground wire, live wire, and neutral wire.

⚠ pay attention to

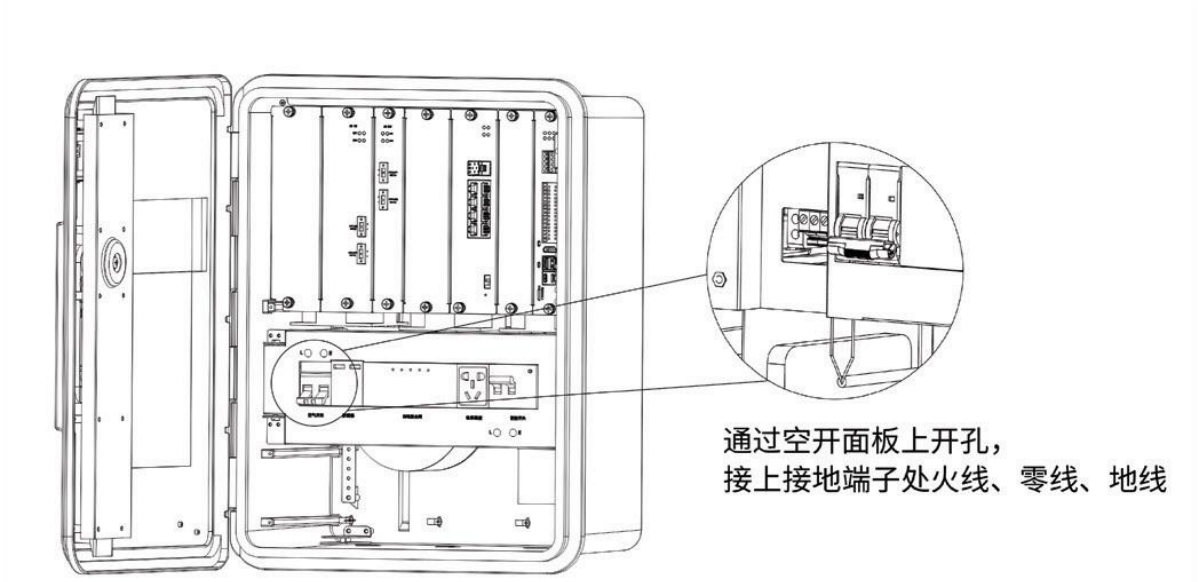
- Do not connect the neutral wire and the live wire incorrectly.
- The equipment must be reliably grounded.
- For operations such as replacing components or devices, all wiring procedures related to 220V AC high-voltage systems must be performed with the input mains power disconnected, including both input and output lines.

1. Remove structural components B and A from the box.



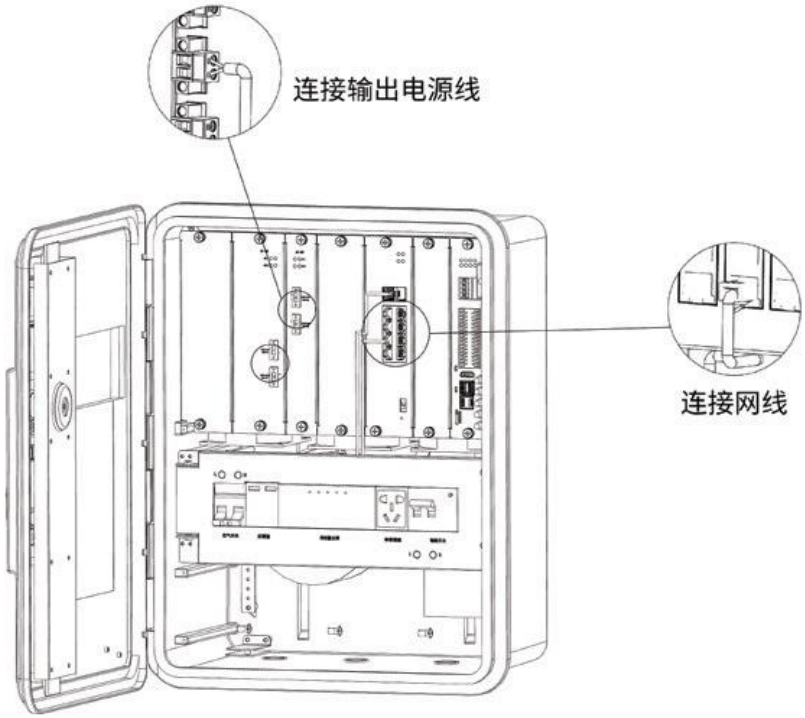
2. According to the screen-printed instructions, connect the neutral and live wires of the external power supply cable to the corresponding ports through the openings on the circuit breaker panel, and ground them accordingly.

Connect the wire to the grounding busbar, then tighten the screws to prevent the wire from falling off.



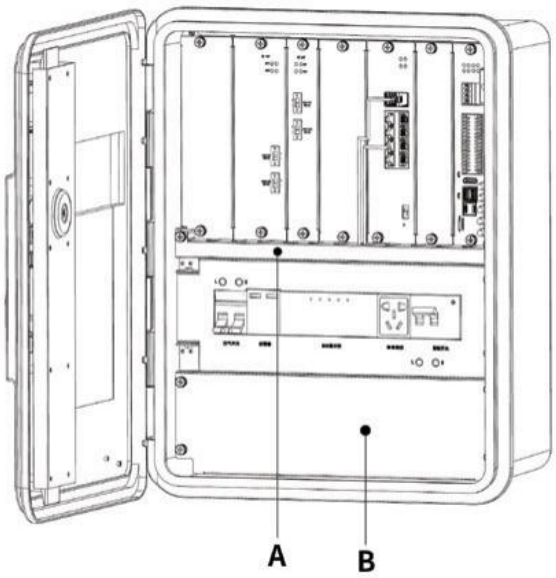
3. Based on the on-site equipment configuration and power requirements, connect the power cable to the corresponding output terminals and route the network cable to the switch network.

On the mouth.

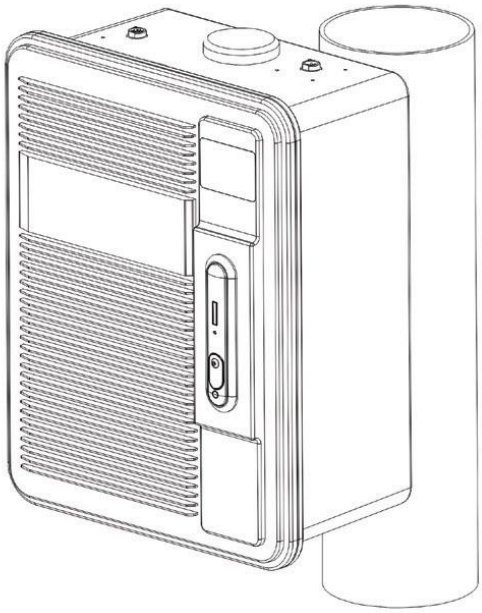


Step 6: After completing the wiring, organize the cables, install structural components A and B respectively,

secure the box door with an electronic lock, and tighten the box door screws.



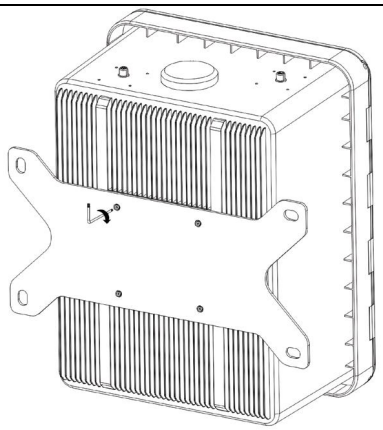
pay attention to
Be sure to lock the box door to prevent water from entering the equipment.



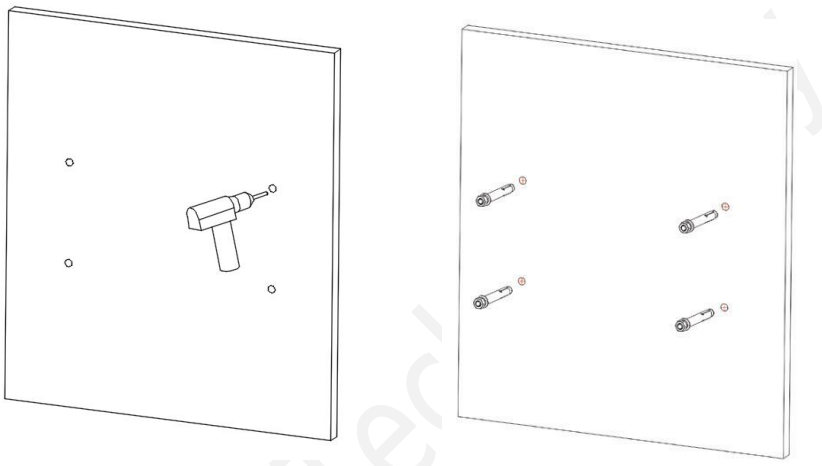
Installation complete

② Wall-mounted installation

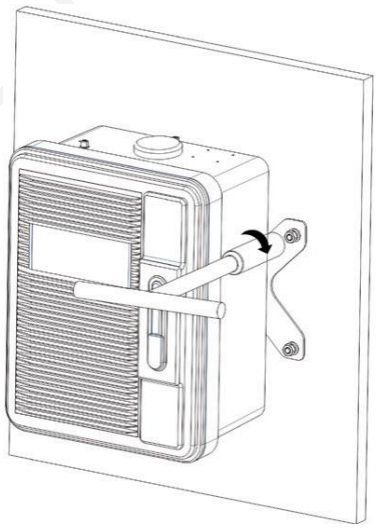
Step 1: Install the back bracket and tighten the four M8*22 screws.



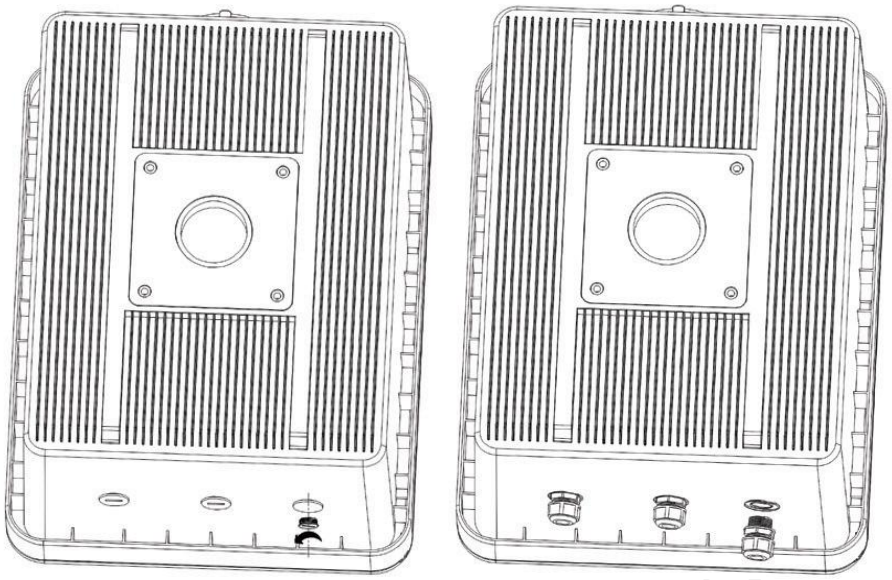
Step 2: According to the dimensions of the mounting bracket, pre-drill four holes for expansion screws on the wall and install the screws.



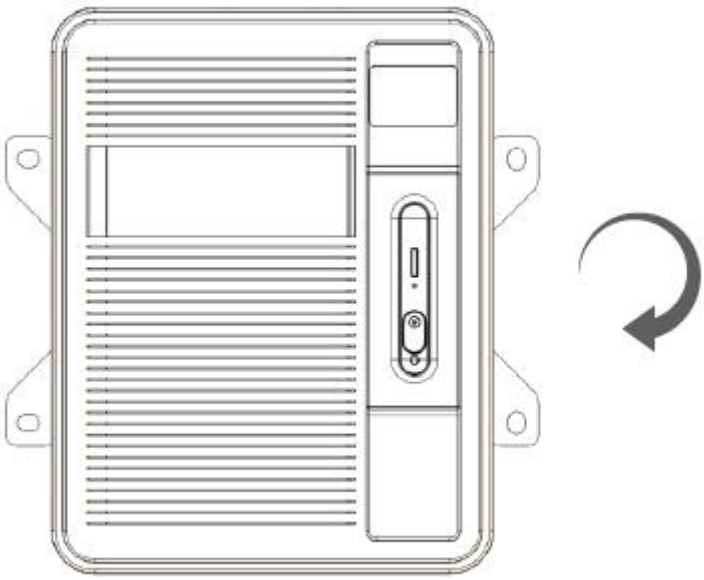
Step 3: Use an extended wrench to install the intelligent traffic terminal box.



Step 4: After removing the bottom plug according to actual requirements, install the waterproof joint.



Step 5: Use a wrench to loosen the screws on the box door, then turn the electronic lock counterclockwise (use a mechanical key for the first unlock).



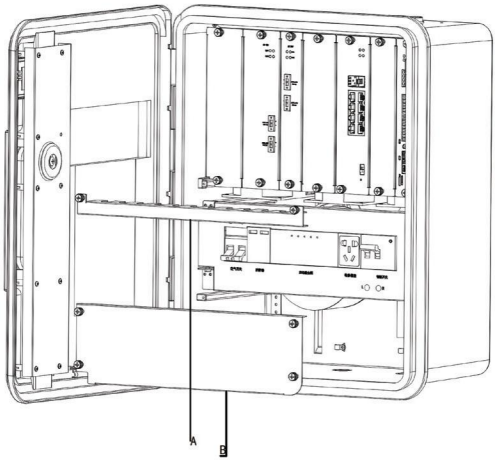
Step 6: Connect the internal wiring

For the first use, connect the ground wire, live wire, and neutral wire.

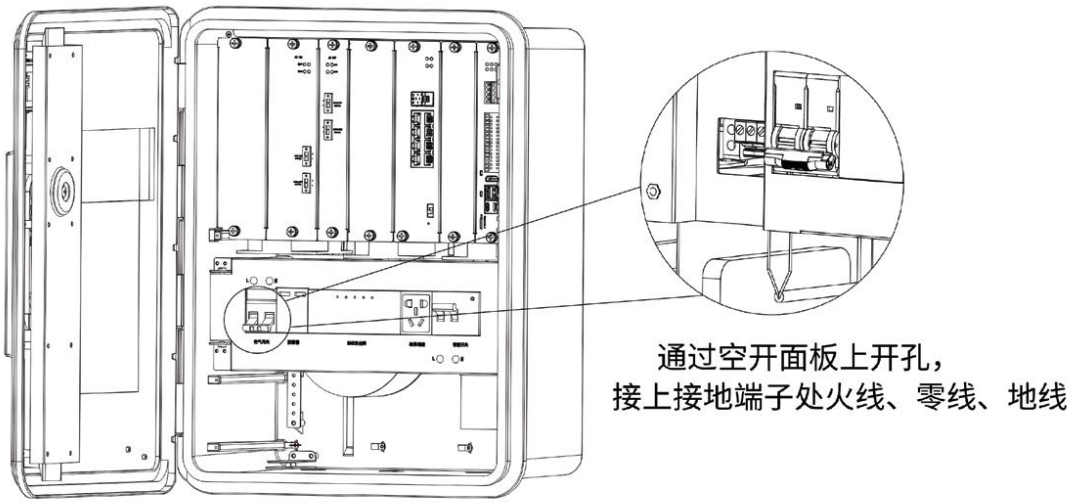
⚠ pay attention to

- Do not connect the neutral wire and the live wire incorrectly.
- The equipment must be reliably grounded.
- For operations such as replacing components or devices, all wiring procedures related to 220VAC high-voltage systems must be performed with the input mains power disconnected, including both input and output wiring.
- After opening the box door, when it reaches position 110, the door and rear shell are subjected to structural locking. Once the internal wiring is completed, the box door must be lifted upward before it can be rotated to close.

1) Remove structural components B and A from the box.

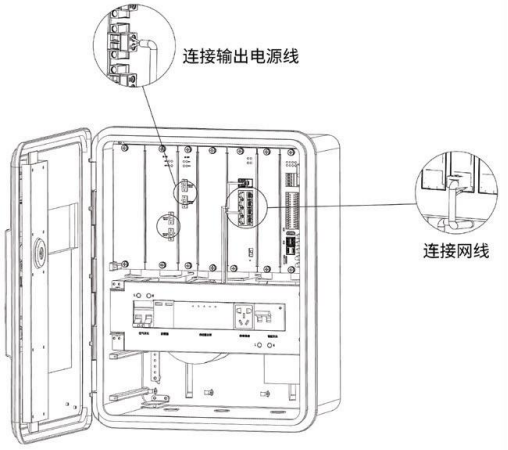


2） According to the screen-printed instructions, connect the neutral and live wires from the external power supply cable to their respective ports through the openings on the circuit breaker panel, and connect the ground wire to the grounding busbar. After completion, tighten the screws to prevent the wires from falling loose.

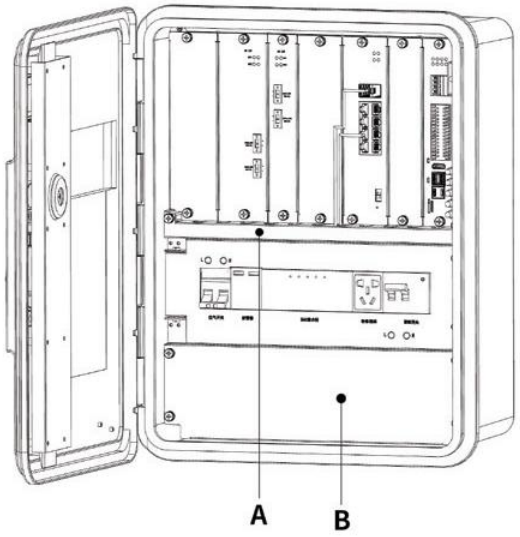


3) Based on the on-site equipment configuration and power requirements, connect the power cable to the corresponding output terminals and plug the network cable into the switchs network port.

1.



Step 7: After completing the wiring, organize the cables, install structural components A and B respectively, secure the box door with an electronic lock, and tighten the door screws.



pay attention to

Be sure to lock the box door to prevent water from entering the equipment.