EEP-150N EDGE AI BOX

User Manual

Copyright

Acknowledgement

Terminology and Abbreviations

The following terms and abbreviations appear throughout this manual.

Term	Expansion / Definition
AI Box	Short form of "EEP-150N Edge AI Box" used throughout this manual.

Jetson / Jetson Orin	NVIDIA's family of embedded AI-compute modules. The EEP-150N supports Jetson Orin NX 16 GB, Orin NX 8 GB, and Orin Nano 8 GB.
JetPack	NVIDIA's software development kit for Jetson modules, which bundles NVIDIA Linux (L4T) and AI libraries such as CUDA, cuDNN, and TensorRT.
L4T	Linux for Tegra — NVIDIA's Ubuntu-based Linux distribution that runs on the Jetson module.
SoM	System on Module — a compact board that integrates the CPU, GPU, memory, and supporting logic. The Jetson Orin series is supplied as a SoM.
SO-DIMM	Small Outline Dual In-line Memory Module — the connector form factor used to socket the Jetson SoM
NVMe SSD	Non-Volatile Memory Express Solid-State Drive — the high-speed storage device fitted to the EEP-150N via its M.2 2280 slot.
M.2	A standardized expansion-card form factor used for SSDs (M.2 2280) and Wi-Fi modules (M.2 E key 2230)
HDMI	High-Definition Multimedia Interface — the digital video/audio connector used for the EEP-150N display output. A locking HDMI connector is provided.
USB Type-A	A common rectangular USB connector
DB-25	A 25-pin D-subminiature connector used on the EEP-150N to expose user-configurable GPIO/DIDO and other digital signals.
DB9	A 9-pin D-subminiature connector used on the EEP-150N for the RS-232/422/485 combo port and the CAN port.
RS-232 / RS-422 / RS-485	Industry-standard serial communication protocols. RS-232 is point-to-point for short distances, RS-422 is differential full-duplex for longer distances, and RS-485 is differential multi-drop for multi-device networks.
CAN / CAN Bus	Controller Area Network — a differential multi-drop bus widely used in automotive and industrial automation.
GPIO	General-Purpose Input/Output — programmable digital signal lines exposed on the DB-25 connector for custom application use.
DIDO	Digital Input / Digital Output — discrete digital signal lines used to interface with industrial sensors and actuators.
RCM	Recovery Mode — a special NVIDIA boot mode used to flash a new system image onto the Jetson module via USB.

RTC	Real-Time Clock — the battery-backed clock circuit that keeps system time when the EEP-150N is powered off.
FE	Functional Earth — the label on the EEP-150N grounding point used to reduce electromagnetic interference and ensure signal integrity.
EMC / EMI / ESD	Electromagnetic Compatibility / Electromagnetic Interference / Electrostatic Discharge — electrical-safety and immunity concepts covered in the Certifications and Grounding sections.
TOPS	Tera Operations Per Second — a measure of AI inference throughput
VESA	Video Electronics Standards Association — the organization whose wall-mount standard the EEP-150N supports.
SDK	Software Development Kit — a collection of libraries, tools, and documentation used to build applications for a platform. NVIDIA JetPack is the SDK for the Jetson family.
Wi-Fi / Bluetooth	Wireless-communication standards. The 'W' variants of the EEP-150N include an onboard Wi-Fi/Bluetooth module; the '-L' variants do not.
RMA	Return Material Authorization — the reference number issued by Emplus that authorizes a faulty product to be returned for repair or replacement (see Product Warranty).

Product Warranty

From the date of purchase, Emplus provides product warranty to the original purchaser. This warranty does not cover products that have been repaired without authorization or by unauthorized personnel. Emplus is not liable for issues caused by improper use, disasters, or incorrect installation.

If an Emplus product malfunctions during the warranty period, we will provide free repair or replacement. For products out of warranty, we will charge for materials and labor at our discretion. Please contact your sales representative for details. If you believe your purchased product has malfunctioned, please follow the steps below:

1. Collect information about the problem you encountered (e.g., CPU frequency, products used, other software, hardware, etc.). Please note any abnormal messages on the screen.

2. Call your supplier to describe the fault. Please provide the manual, the product, and any useful information.

3. If the product is diagnosed as faulty, contact Emplus sales to obtain an RMA (Return Material Authorization) number. This allows us to begin retrieving the faulty product as quickly as possible.

4. Carefully package the faulty product and include the complete after-sales service card and proof of purchase date (such as a sales invoice). We do not provide warranty service for products without proof of purchase date.

5. Write the RMA number on the outer packaging and ship it to your sales contact.

Restricted Substances Declaration

Device: Edge AI Box	**Model:** EEP-150N/E50NB series(models refer to the table below)					
Component / Unit	**Restricted Substances**					
	Pb	**Hg**	**Cd**	**Cr^{6+}**	**PBB**	**PBDE**
Circuit Board Assembly	—	○	○	○	○	○
Storage Device	—	○	○	○	○	○
Input/Output Device	—	○	○	○	○	○
Power Supply	—	○	○	○	○	○
Metal Mechanical Parts	—	○	○	○	○	○
Plastic Mechanical Parts	○	○	○	○	○	○
HDMI cable	—	○	○	○	○	○

*1. “Exceeding 0.1 wt %" and "Exceeding 0.01 wt %" mean that the percentage content of restricted substances exceeds the reference percentage value

*2. “○” indicates the percentage content of the restricted substance does **not exceed** the threshold.

*3. “—” indicates the restricted substance is **exempted**.

*4. EEP-150N/E5-NB series

EEP-150N series	EEP-150N-X16 EEP-150N-X16-L	EEP-150N-X08 EEP-150N-X08-L	EEP-150N-N08 EEP-150N-N08-L
E5-NB series	E5-NB16W E5-NB16	E5-NB08W E5-NB08	E5-NA08W E5-NA08

Certifications and Declaration

A. EMC

EMC certifications ensure that your industrial computer doesn't interfere with other electronic devices (emissions) and is immune to electromagnetic interference from external sources (immunity).

- CE Marking: Complies with the EU Radio Equipment Directive (2014/53/EU). The device passed RF performance testing per EN 300 328 / EN 300 440 and meets EMC harmonized standards EN 55032 / EN 55035 / EN 301 489-1-17.
- FCC Part 15B Class A: The primary U.S. EMC regulation for electronic equipment, used to limit radio-frequency interference.
- ICES (Innovation, Science and Economic Development Canada): The Canadian EMC standard, similar in scope to FCC Part 15. Common standards include ICES-003.
- EN 61000-6-1 and EN 61000-6-3: Emission and immunity standards for residential / light-industrial and industrial environments.
- NCC：Taiwan's official authority for radio spectrum, telecom, and communication equipment. Products with Wi-Fi, Bluetooth, or cellular functions are required to pass NCC type-approval for RF and EMC compliance.
- BSMI CNS 15936: Taiwan's mandatory national EMC standard for multimedia equipment, specifying interference emission limits and immunity to external interference so that electronic products operate without mutual disturbance.
- AS/NZS CISPR 32:2015+AMD1:2020: The mandatory emission standard for multimedia equipment in Australia and New Zealand; required for the RCM mark and market access in those countries.
- UKCA (UK Conformity Assessed): Mandatory UK product-conformity mark implemented post-Brexit, demonstrating compliance with UK domestic regulations (covering safety, EMC, and radio), replacing the CE mark for Great Britain.

B. Safety

These certifications ensure that your industrial computer meets the safety standards of different regions, minimizing risks of electrical shock, fire, and other hazards.

- IEC 62368-1: This is an internationally recognized standard for the safety of Information and Communication Technology (ICT) and audio/video equipment. It's becoming a widely accepted global standard.
- UL/CSA 62368-1: In North America (USA and Canada), UL and CSA standards are crucial. While UL and CSA are independent organizations, they often certify to similar standards like UL/CSA 62368-1. UL is a well-recognized mark in the US, while CSA is important in Canada.

- BSMI CNS 15598-1: Taiwan's mandatory national safety standard for IT products (computers, servers, etc.), intended to prevent users from electrical shock, energy hazards, or fire while using the equipment.

C. Compatibility

- HDMI: The device has passed the HDMI v1.4 source CTS test and carries an HDMI Association certificate, ensuring compatibility with a wide range of HDMI displays and connected equipment.

D. Energy Efficiency

- ErP: The EU's mandatory energy efficiency and eco-design regulation, intended to deliver energy conservation and ensure products meet minimum requirements for standby power consumption and energy efficiency.

Technical Support & Service

1. For the latest product information, please visit Emplus Technologies' website: https://www.emplustech.com/

2. For technical support, please contact your local distributor, sales representative, or Emplus Customer Service Center. Before contacting technical support, please have the following product information ready:

– Product name and serial number

– Description of attached peripherals

– Description of user software (OS, version, application software, etc.)

– Full description of the problem(s) encountered

– Exact contents of every error message shown

Safety Instructions

1. Read these safety instructions carefully.

2. Keep this user manual for later reference.

3. Disconnect the power cord from the outlet before cleaning the equipment with a damp cloth. Do not use liquid or aerosol cleaners.

4. For equipment using a power cord, the power outlet must be easily accessible near the equipment.

5. Do not use the equipment in humid environments.

6. Before installation, ensure the equipment is placed on a stable surface. Accidental drops may damage the equipment.

7. Openings in the enclosure are for air ventilation, to prevent overheating. Do not cover these openings.

8. Before connecting the equipment to the outlet, verify the outlet voltage meets the requirements.

9. Route the power cord where people are unlikely to trip over it, and do not place any objects on top of the cord.

10. Observe all warning labels on the equipment.

11. If the equipment will not be used for a long time, unplug it from the outlet to avoid damage from abnormal voltage fluctuations.

12. Do not let any liquid enter the ventilation openings, to avoid fire or short circuits.

13. If internal modules need to be replaced, please contact your distributor and have replacement performed by qualified personnel.

14. In any of the following situations, please have the equipment serviced by qualified personnel:

- The power cord or plug is damaged;
- Liquid has entered the equipment;
- The equipment has been exposed to excessively humid environments;
- The equipment does not work properly, and you cannot restore normal operation by following the user manual;
- The equipment has been dropped or damaged;
- The equipment shows obvious physical damage.

15. Operating temperature: −20 to 50°C. To achieve full product performance, please use the equipment in a well-ventilated location with at least 0.7 m/s airflow.

16. Do not replace the power adapter by yourself. If replacement is necessary, please contact a qualified technician or your sales representative.

17. The computer contains a real-time clock circuit powered by a battery. There is a risk of explosion if the battery is replaced incorrectly. Therefore, replace only with the same or an equivalent type recommended by the manufacturer, and dispose of used batteries according to the manufacturer’s instructions.

18. Dispose of used equipment in accordance with local regulations.

19. Maintenance: To properly maintain and clean the surface of the equipment, use certified cleaning products or a dry cloth.

20. Contact information:

Applicant: Emplus Technologies Inc.

10F, Building B, No.209, Section 1, Nangang Road, Nangang District, Taipei City, Taiwan. Tel: +886-2-2792-1216

Battery

If this device comes with a battery, please note the following:

- Incorrect replacement may cause explosion risk. Only replace with the same type or one recommended by the manufacturer.
- Do not throw the battery into fire or ovens, or crush/cut it mechanically, to avoid explosion.
- Avoid placing the battery in extremely high temperatures or very low-pressure environments, which may cause explosion or leakage of flammable liquids/gases.
- Do not put the battery in your mouth. Swallowing coin/button batteries can cause severe internal burns and may lead to death. Always store new and used batteries out of reach of children.

European Union

Batteries, battery packs, and accumulators must not be disposed of as unsorted household waste. Please return, recycle, or dispose of batteries through public collection systems in accordance with local regulations.

BSMI (Taiwan)

Waste batteries should be recycled. To protect the environment, waste batteries must be collected separately for recycling or disposal.

California, USA

Button cell batteries may contain perchlorate material and require special handling when recycled or disposed of in California.

Warning!

To avoid electromagnetic interference, this product must not be installed or used in residential environments

Table of Contents

1. Introduction

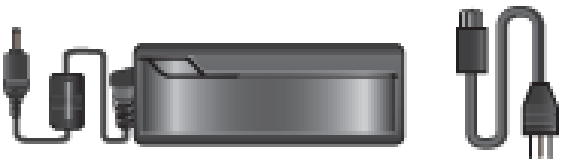
Product Overview

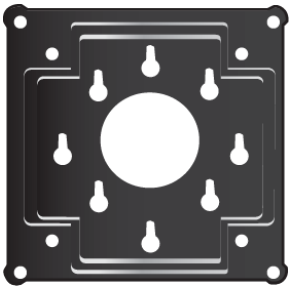
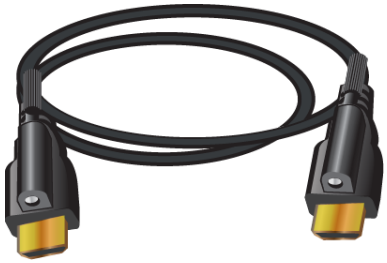
The EEP-150N Edge AI Box is a high-performance edge computing device powered by the NVIDIA Jetson Orin NX/Nano processor. With up to 157 TOPS of AI performance and support for up to 24 Full HD video channels, it is designed for applications such as smart retail, smart buildings, smart factories, and intelligent transportation.

Key Features

- Powered by NVIDIA Jetson Orin NX/Nano modules
- Multi-camera support with frame synchronization
- Efficient performance per watt (25W–40W depending on mode)
- Real-time video analytics and decision-making at the edge
- Connectivity options: Ethernet, EtherCAT, Wi-Fi
- Secure, low-latency operation with Nvidia Linux-based edge OS
- Fanless design: the CPU module can operate in 40W Super mode at −20–50°C with 0.7 m/s airflow without thermal throttling.

Package Contents

EEP-150N Edge AI BOX	Power Adapter
	
VESA mount kit	Screws/Wall anchors/ Rubber pads

	
HDMI Cable	
	

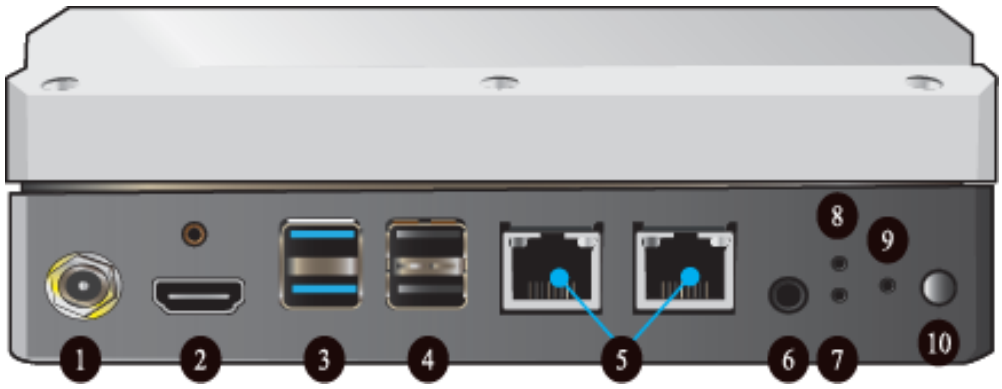
Optional accessories

Wi-Fi antenna	Wall mount kit with four M4 screws
	

2. Hardware Overview

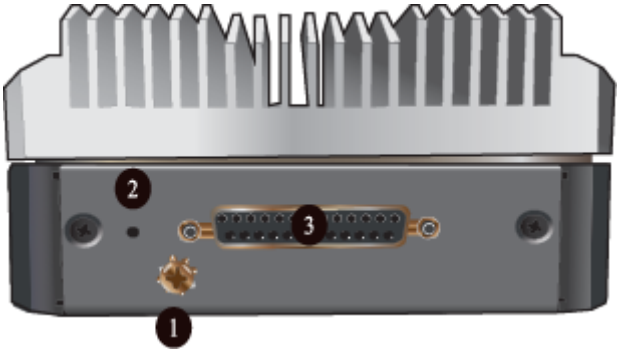
I/O ports

Front



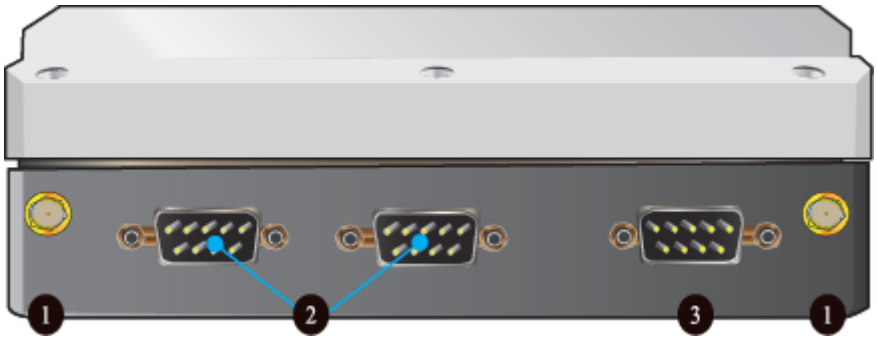
No.	Item name	Features
1	DC power jack	12~24V DC in, with lockable jack.
2	HDMI	This is an HDMI port with screw-locking capability.
3	USB 3.2 Type A	These two are of USB 3.2 Gen 2 that support up to 10 Gbps for data signaling.
4	USB 2.0 Type A	These two are widely adopted interface standard, offering a maximum data transfer rate of 480 megabits per second. It is fully backward compatible with USB 1.1.
5	LAN port	Gigabit PCIe LAN port, providing data transfer speeds of up to 1000 Mbps.
6	Audio Line-out	This is an analog audio output port that sends a low-level signal from a computer or audio device to external equipment. (Note: line-level signal requires amplification before driving loudspeakers.)
7	System LED	Displays system power and running status. Different LED colors or blink patterns indicate real-time hardware states such as power-on, sleep, standby, and power-off.
8	Status LED	Provides developer-definable display logic, usable to indicate specific application status, Wi-Fi connection quality, or data transfer activity.
9	Reset button	Used to restart the AI Box.
10	Power button	Used to turn the AI Box on or off. Press and hold to force shutdown.

Left



No.	Item name	Features
1	Ground screw	Functional grounding.
2	Recovery button	Used to enter Recovery Mode.
3	DB25 type 25-pin self-definition GPIO & DIDO	A DB25 GPIO/DIDO port is essentially a user-programmable hardware interface for direct digital control and monitoring and gives you raw input/output lines to integrate with industrial sensors, actuators, and automation systems.

Back



No.	Item name	Features
1	RP-SMA connector	Connects an external dipole antenna.
2	DB9 type RS232/422/485 combo port	Details below
3	DB9 type CAN port	Details below.

No	Item Name	Features
RS232	• Point-to-point (1:1) • Short distance (up to ~15 m) • Simple, widely supported	• Connecting legacy PLCs • Serial consoles for configuration • Barcode scanners, label printers, POS systems
RS422	• Differential signaling (better noise immunity) • Longer distance (up to ~1,200 m) • Full-duplex	• Industrial sensors and controllers • Medical and laboratory equipment • Long-distance communication in noisy environments
RS485	• Differential signaling + multi-drop (network of devices) • Supports up to 32+ devices • Half-duplex (most common)	• Building automation (HVAC, lighting) • Motor drives and robotics • Modbus RTU networks (very common in factories) • Energy monitoring systems
CAN	• Multi-drop bus • Message-based with arbitration & error detection • Up to ~1,000 m (depending on speed)	• Automotive diagnostics and ECU communication. • Industrial automation (CANopen, DeviceNet). • Robotics (distributed motor controllers). • Medical equipment and embedded systems.

3. Stationing and Mounting

Working environment

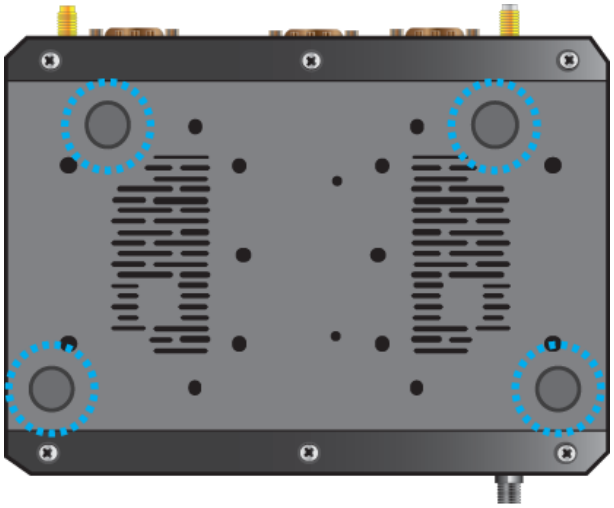
Notes:

- Use only the supplied AC adapter (output 19V | 3.42A, 64.98W).
- Ensure adequate ventilation around the unit and avoid blocking airflow.
- An industrial-grade SSD is recommended for high-temperature operation.
- Do not disassemble or modify the unit.
- Operating temperature range: −20°C to 50°C at 0.7 m/s airflow (workload-dependent).
- Cable handling: avoid excessive bending; keep cables tidy and away from walkways.

Desktop mount

1. Prepare a surface

- Place the AI Box upside-down on a soft, clean surface to avoid scratches.
- Wipe the bottom panel with a clean cloth to remove dust or grease. Ensure the surface is dry before proceeding.

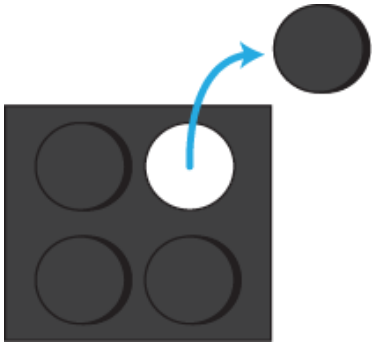


2. Identify pad positions

- Locate the four designated corners on the bottom panel.
- Each pad goes near one corner.

3. Attach the pads

- Peel the protective film from the adhesive side of the pad.
- Press the pad firmly onto the designated corner area.
- Repeat for the other three pads.



4. Check stability

- Turn the AI Box right-side up.
- Gently place it on the desktop and confirm that all four pads contact the surface.
- Ensure the unit does not wobble.

VESA wall mount

Use the mounting method shown in this manual.

Preparation

- Identify the A and B faces of the VESA mounting plate.
- Identify the top and bottom edges of the VESA mounting plate.

1. Mark the position

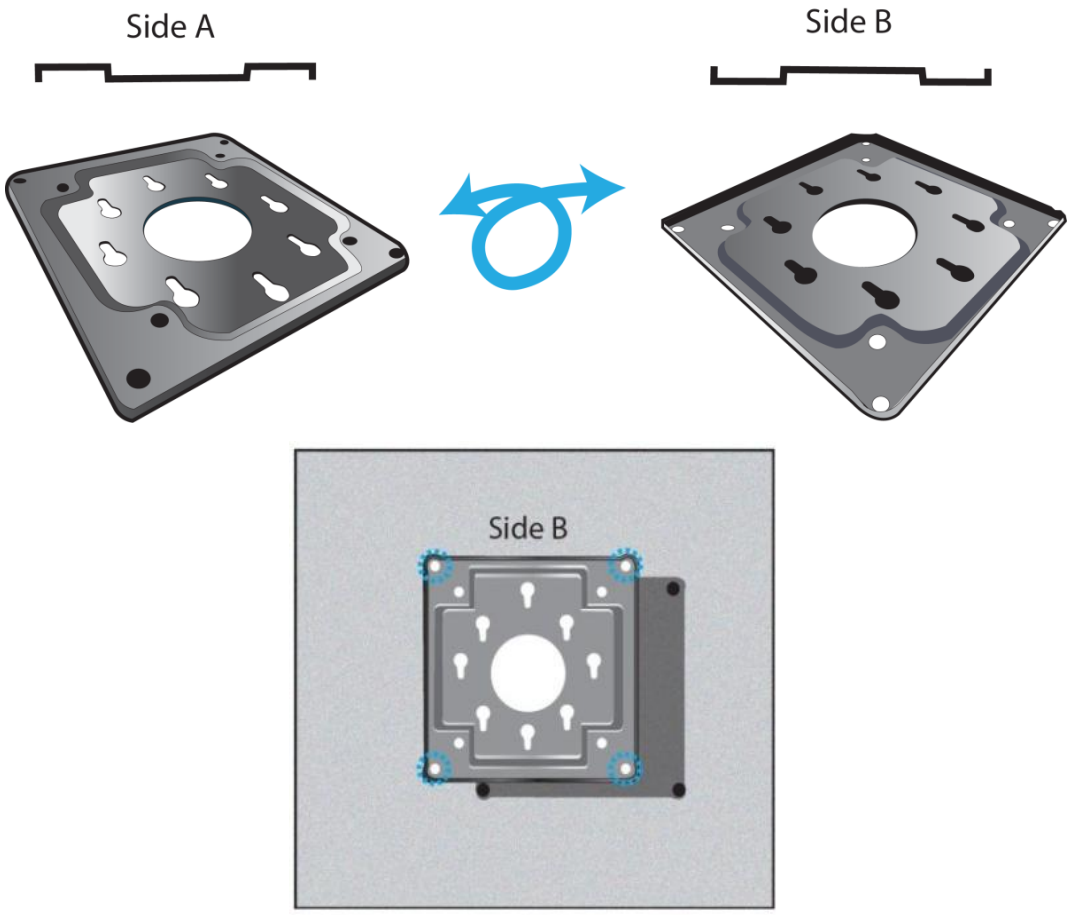
Use a level and a pencil to mark the exact mounting position on the wall.

2. Drill holes

Drill according to the screw-hole pattern of the mounting plate. Insert wall anchors if necessary (especially for drywall).

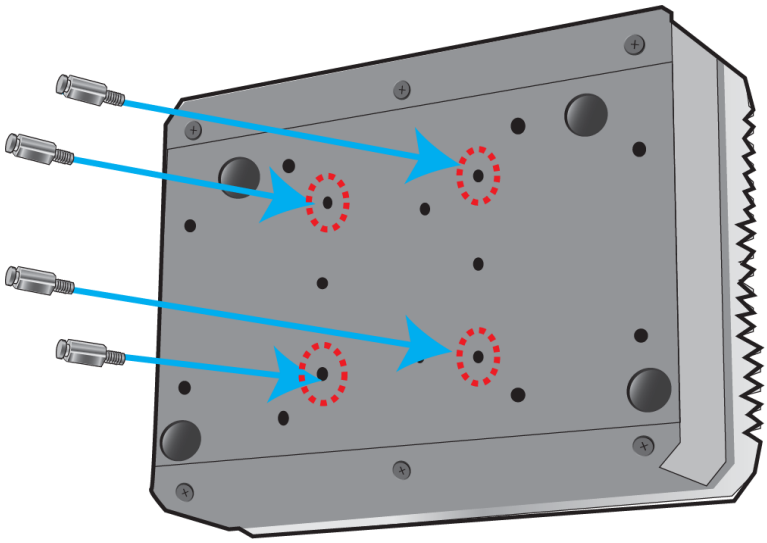
3. Secure the mounting plate

With the B face toward you (or the A face flush against the wall), use the supplied mounting screws in an inverted orientation to firmly fasten the plate to the wall. Ensure it is level and solid.



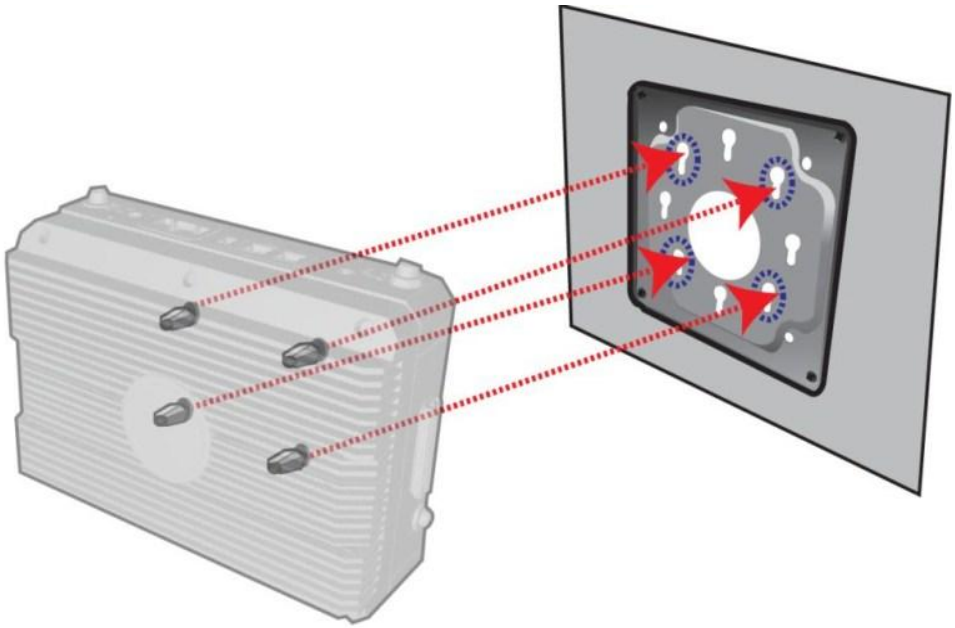
4. Install shoulder screws on the bottom of the unit

Insert the specified shoulder screws into the threaded holes on the bottom of the AI Box.



5. Hang the screws on the VESA mounting plate

Align the screws with the slots on the VESA mounting plate and hang them in.



6. Slide down and lock

Slide the AI Box downward until the screws lock into place.

7. Final check

Apply gentle pressure to test stability and ensure the chassis does not wobble or shift.

Flat wall mount (optional accessory)

• Use the mounting method shown in this manual.

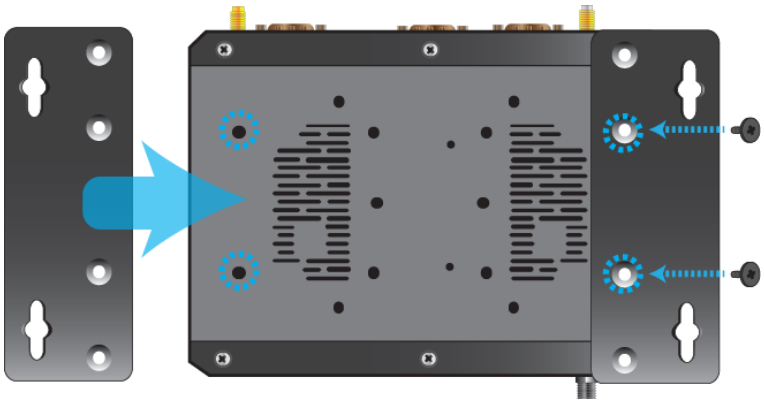
1. Select a mounting location

- Choose a flat, solid wall surface that can support the weight of the AI Box.
- Ensure adequate airflow, cabling room, and maintenance clearance.
- Avoid direct sunlight, high humidity, and vibration-prone areas.

2. Prepare the AI Box

- Install the mounting bracket on the AI Box.

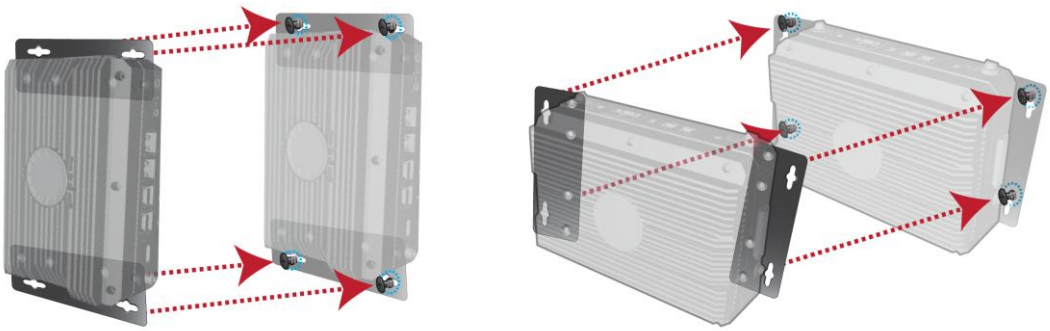
Note: the mounting plate has countersunk holes so that screw heads sit flush with the surface.



3. Prepare the wall and secure the mounting screws

- Hold the prepared AI Box against the wall and mark the screw-hole positions with a pencil.
- Drill pilot holes at the marked points.
- Insert wall anchors if mounting into drywall or concrete.
- Partially tighten the mounting screws, leaving enough head protrusion to catch the mounting-plate slots.

4. Hang the mounting plate on the wall screws to install the AI Box.



5. Connect cables

- Connect power, Ethernet, USB, and other I/O cables.
- Route cables neatly along the wall using clips or cable ties.
- Provide strain relief so the connectors are not stressed.

6. Final check

- Gently tug the AI Box to confirm it is firmly secured.
- Confirm airflow around the heat sink is unobstructed.
- Double-check cable connections and overall stability.

Grounding

Purpose of grounding

- Functional Grounding
- Improve EMC: provides a low-impedance return path for high-frequency noise, effectively reducing electromagnetic interference (EMI).
- Ensure signal integrity: maintains a stable system reference potential, preventing data errors or system restarts caused by potential fluctuations during use.
- ESD discharge: routes induced charges on the chassis to ground, protecting sensitive internal electronics (e.g., GPU, core modules) from electrostatic disturbance.

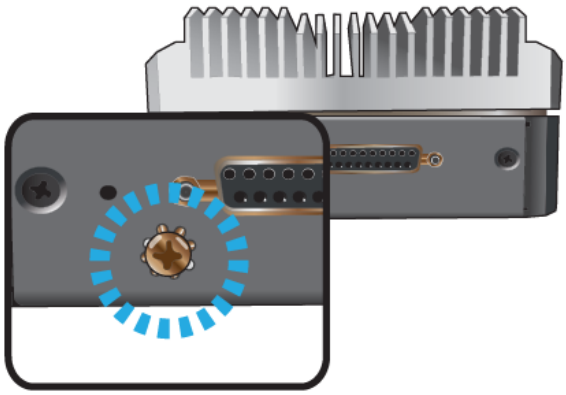
Cable specifications

- High-frequency considerations: use a braided grounding strap or a large cross-section multi-stranded copper cable to reduce impedance caused by the skin effect at high frequencies.

- Shortest-path principle: the cable should be as short and wide as possible to avoid forming inductance.
- Routing separation: functional grounding should be kept away from power wiring to avoid coupling noise into the system.

Step-by-step grounding procedure

- Locate the dedicated grounding point on the AI Box marked with the FE (Functional Earth) symbol.
- Prepare a low-impedance braided grounding strap or multi-stranded copper cable, and crimp high-quality O-type terminals on both ends.
- Clean the contact surface, ensuring the metal is free of paint or oxide. Use a star washer for broad-band contact with the metal chassis.



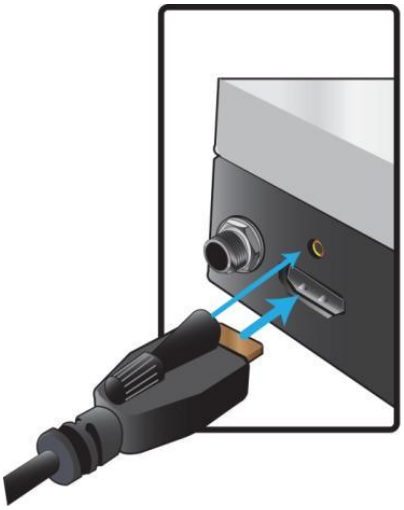
- Fasten the terminal at the designated location, ensuring good electrical conductivity at the joint.
- Connect the other end to the system's signal reference ground bus, or to the cabinet's dedicated Clean Earth.
- Verify with a spectrum analyzer or a low-impedance tester. At high frequencies, the impedance of the grounding path must be very low.
- Isolation check: ensure the functional ground path does not introduce external mains-frequency noise due to poorly designed ground loops.
- Confirm that the shields of all sensors are properly bonded to this grounding point for best immunity.

4. Connections and Initial Setup

Connect peripherals

- Connect a monitor, keyboard, mouse, and network cable.

HDMI cable connection



The HDMI plug integrates a mechanical screw-lock feature to improve retention and vibration resistance.

The HDMI port is fitted with precision threaded screw holes above the connector, allowing secure connection of a compatible panel-mount HDMI receptacle (with matching threaded inserts). This design ensures stable signal integrity and prevents accidental disconnection. The locking mechanism complies with extended HDMI mechanical specifications and supports the standard Type A HDMI pin configuration and shielding requirements.

Power cable connection

The power plug integrates a mechanical ring-lock feature to improve retention and vibration resistance.

1. Insert the plug

Align the power plug with the unit’s socket and push it in firmly until fully seated.

2. Engage the locking ring

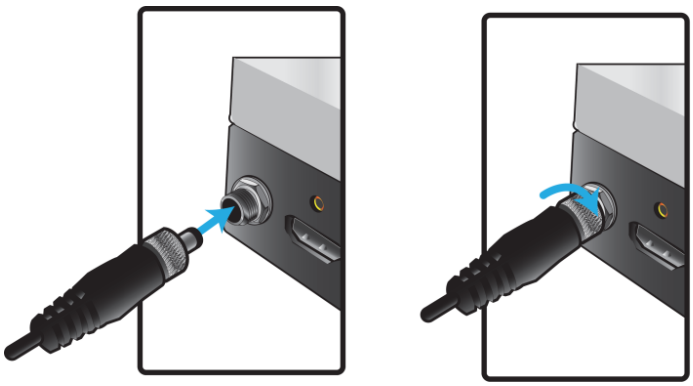
Rotate the locking ring to secure the plug. This prevents accidental disconnection from vibration or pulling.

3. Check stability

Make sure the plug is secure and cannot be pulled out easily without releasing the locking ring.

4. Disconnect the plug

To disconnect, rotate the locking ring back to the unlocked position, then gently pull out the plug.



RP-SMA antenna connector (wireless)

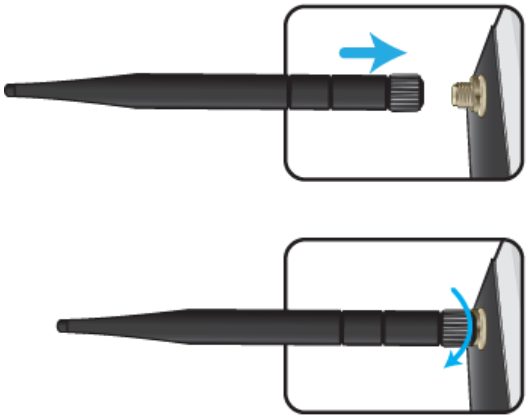
The unit is equipped with a pair of RP-SMA connectors, widely used in wireless communication equipment for connecting external antennas, and compatible with a variety of commercial Wi-Fi and wireless antennas.

Each connector provides a secure mechanical mating and stable electrical performance, minimizing signal loss and maintaining consistent impedance for reliable wireless transmission.

Installing the antenna:

1. Align the threaded RP-SMA connector on the unit with the matching antenna plug. Carefully position the antenna so the internal pin and socket engage correctly.

2. Gently rotate the antenna clockwise to engage the threads. Continue turning until the connection feels snug, but avoid applying excessive force, as over-tightening can damage the connector or antenna base.



5. Indicator

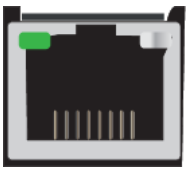
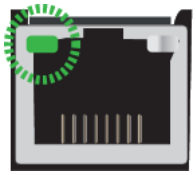
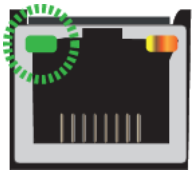
System LED (green)

- Off: system is powered off or sleeping.
- On: power on, system is running.

Status LED (blue)

- Can be customized by software to indicate application-defined states.

Ethernet LED

Indicator light		Description
Link	Active	
		· 10 Mbps (10M): Green Indicators show connection at 10Mbps, suitable for basic networking tasks.
		· 100 Mbps (100M): Indicator shows connection at 100Mbps, providing faster data transfer for standard use.
		· 1 Gbps (1000M): When both the green and orange indicators are lit, they signify a 1Gbps connection, providing maximum speed for high-performance networking.

6. Power/Reset/Recovery buttons

Description

Power button

- Single press: power on / power off
- Force shutdown: press and hold for 10 seconds

Reset button (pinhole)

- System reset.

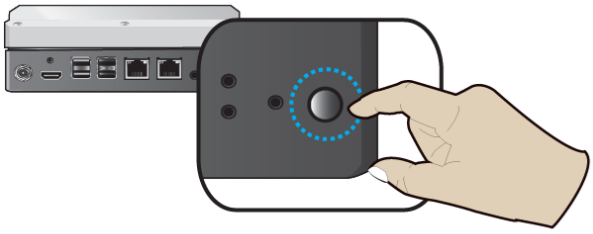
Recovery button (pinhole)

- Hold during power-on: when the system detects the Recovery button being pressed, it enters Recovery Mode and writes a new firmware image from USB to the SSD.

Power on

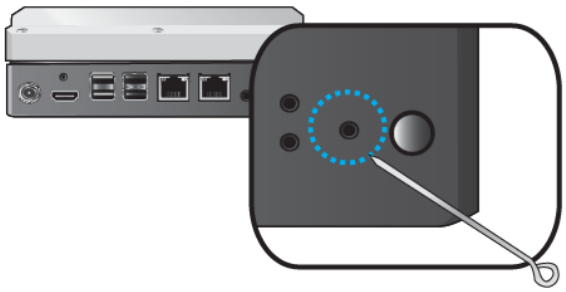
Single press

- Device off: powers on
- Device on: prompts for shutdown confirmation
- Force shutdown: press and hold for 10 seconds



System Reset

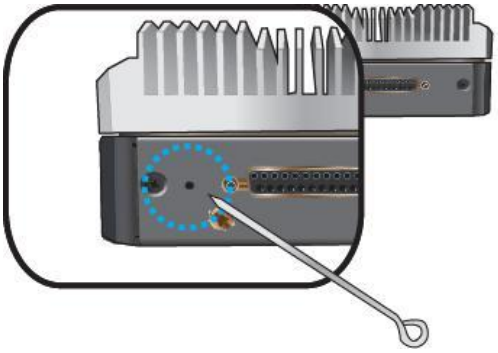
The Reset button is a hardware control that immediately restarts the system, typically used when the system is unresponsive or encounters errors that cannot be resolved via normal software commands.



When pressed, it interrupts all current operations and forces the computer back to the initial boot state. On this unit, the Reset button is implemented as a recessed pinhole. To operate it, insert a pointed object (such as a paper clip) into the hole and gently press.

System Recovery

To recover the system using the Recovery button on the unit, please refer to the software operation manual for operation process.

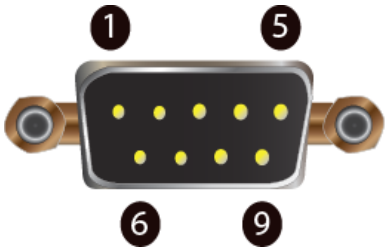


7. Advanced

CAN Port

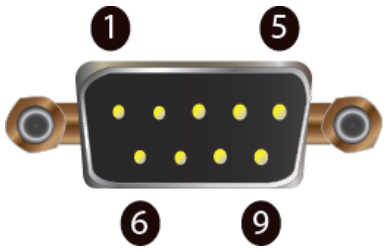
The Controller Area Network (CAN) enables communication between devices.

Pin	Signal	Description
1	NC	Not connected
2	CAN_Low	Differential CAN signal, negative level
3	GND	Reference level
4	NC	Not connected
5	NC	Not connected
6	NC	Not connected
7	CAN_High	Differential CAN signal, positive level
8	NC	Not connected
9	NC	Not connected



COM Port

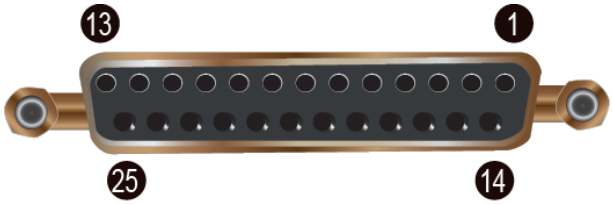
Pin	RS-232	RS-422	RS-485
1	COM_DCD#	COM_TXD_N	COM_D-
2	COM_RXD#	COM_TXD_P	COM_D+
3	COM_TXD#	COM_RXD_P	NC
4	COM_DTR#	COM_RXD_N	NC
5	COM_GND	NC	NC
6	COM_DSR#	NC	NC
7	COM_RTS#	NC	NC
8	COM_CTS#	NC	NC
9	COM_RI#	NC	NC



DIDO

The D-Sub 25-pin IO defaults to 5 V and can be adjusted to 3.3 V. Please contact your distributor if needed.

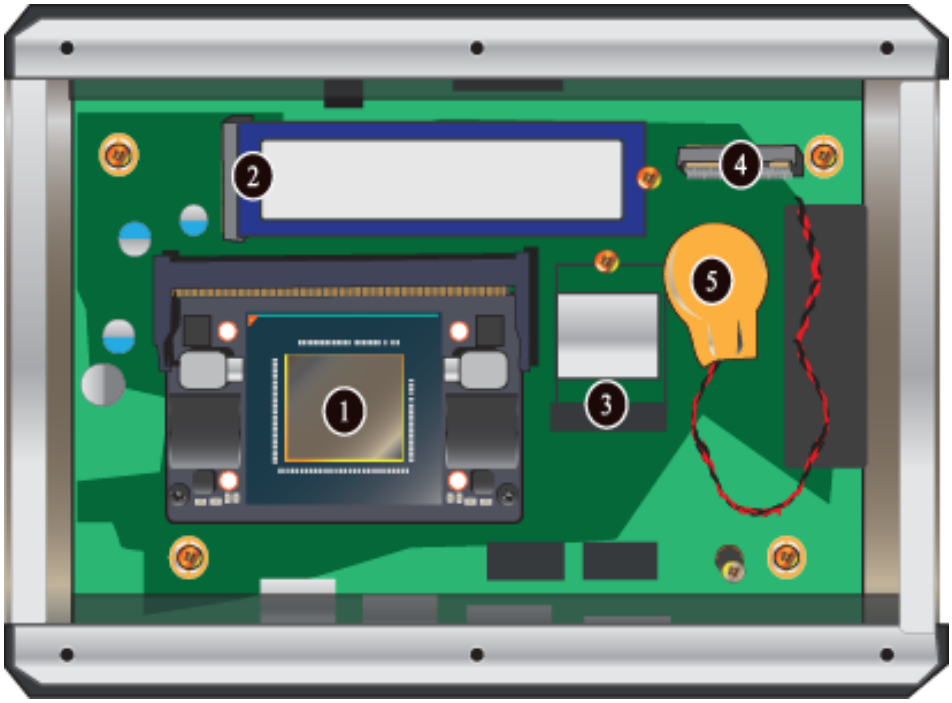
Pin	Signal	Voltage	Pin	Signal	Voltage
1	GND		2	5V	
3	5V		4	GND	
5	SPI0_SCLK	5V	6	SPI0_CS1_L	5V
7	SPI0_MOSI	5V	8	SPI0_MISO	5V
9	SPI0_CS0_L	5V	10	GND	
11	GPO_5	5V	12	GPO_1	5V
13	GPO_2	5V	14	GPO_6	5V
15	GPI_7	5V	16	GPI_8	5V
17	GPI_3	5V	18	GPI_4	5V
19	3.3V		20	3.3V	
21	UART1_RXD	5V	22	UART1_TXD	5V
23	I2C1_SDA	5V	24	I2C1_SCL	5V
25	GND				



8. Internal Layout

Warning!

This section requires professional installation. For any installation or repair needs, please contact your local distributor.



No.	Item name	Features
1	CPU module	Jetson Orin NX 16GB Module (default) with standard SO-DIMM form factor.
2	M.2 2280 Gen3/4 socket	Reserved for pre-installed NVME SSD, default 256GB.
3	M.2 E key 2230 socket	Reserved for pre-installed WiFi module.
4	M.2 M key 2280 socket	This is for secondary NVME SSD for data storage
5	Battery	Provides backup power for system settings such as the real-time clock (RTC) and configuration feature

9. Specifications and Dimensions

Emplus / Engenius series hardware specifications

Model	EEP-150N-X16 / E5-NB16W	EEP-150N-X08 / E5-NB08W	EEP-150N-N08 / E5-NA08W
CPU	8-core NVIDIA® Jetson Orin NX 16GB SOM	6-core NVIDIA® Jetson Orin NX 8GB SOM	6-core NVIDIA® Jetson Orin Nano 8GB SOM
GPU	1024-core NVIDIA Ampere GPU, 32 Tensor Cores, max 918 MHz	1024-core NVIDIA Ampere GPU, 32 Tensor Cores, max 765 MHz	1024-core NVIDIA Ampere GPU, 32 Tensor Cores, max 625 MHz
RAM	16GB 256-bit LPDDR5	8GB 256-bit LPDDR5	8GB 256-bit LPDDR5
AI performance	Up to 157 TOPS	Up to 117 TOPS	Up to 67 TOPS
DL accelerator	2x NVDLA v2	1x NVDLA v2	N/A
Power	10W-25W, 40W MAXN	10W-25W, 40W MAXN	7W-15W, 25W MAXN
Wi-Fi	802.11 a/b/g/n/ac/ax Wireless LAN 2T2R and Bluetooth 5.2		

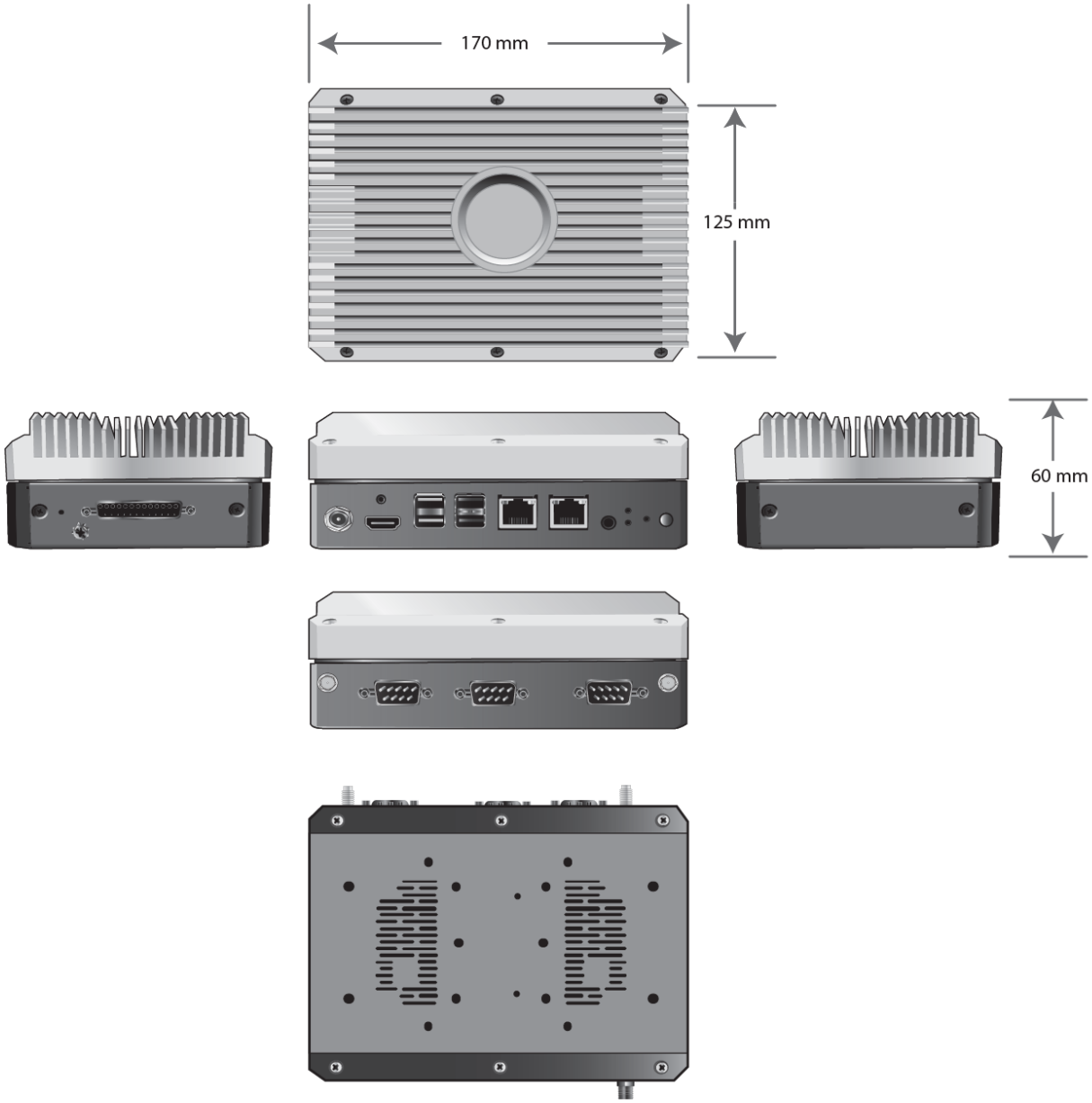
Model (no Wi-Fi)	EEP-150N-X16-L / E5-NB16	EEP-150N-X08-L / E5-NB08	EEP-150N-N08-L / E5-NA08
Wi-Fi	None (other specs identical to the W variants above).		

* NVIDIA® Jetson Orin NX 16GB SOM, NX 8GB SOM, and Nano 8GB SOM are pin-compatible system modules.

Item	Specification
Storage	M.2 2280 Gen3/4 NVME SSD, default 256 GB
DIDO	4x DI (digital input), 4x DO (digital output), 3.3 V or 5 V (default)
Board expansion	1x M.2 M key 2280 for the NVME SSD system image; 1x M.2 M key 2280 for a second NVME SSD (data storage); 1x M.2 E key 2230 socket for Wi-Fi
Wi-Fi / BT	802.11 a/b/g/n/ac/ax Wireless LAN 2T2R and Bluetooth 5.2
Power input	12 - 24 V | 5.4 A
Dimensions	170 x 125 x 60 mm
Weight	1.9 kg (unit only)

Operating temperature	−20°C to 50°C (0.7 m/s airflow). Note: industrial-grade SSD is required for high-temperature operation.
Storage temperature	−40°C to +85°C
Storage humidity	5% - 95% @ 40°C (non-condensing)

Dimensions



Software specifications

The EEP-150N software includes (but is not limited to) the following:

Item	Description
Operating system	NVIDIA Linux L4T
File system	Ext4
Graphics interface	Wayland / Weston
Web service	Nginx (optional)
Database	Milvus (optional)
Communication	REST API / MQTT
Device drivers	Peripheral device drivers
Development kit	NVIDIA Jetpack SDK and frameworks
Security features	Authentication and authorization; data encryption; firmware verification
Test tools and programs	Developed for EVT / DVP / PVT and manufacturing test tools