

# AIBOX-3576M V1.0 Standard Version

## Product Specification

### Sheet

#### AI Industrial Control Box



## Document Revision History

Version Number	Revision Content	Revised By	Reviewed By	Date
V1.0	Creation	Yan Chengbin	Qiu Shunfeng	2024-11-26

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# Chapter 1 Product Overview

## 1.1 Industry Application

This product is a highly cost - effective AI terminal motherboard. It features a compact mini - board design and is based on the RK3576 octa - core processor with a maximum main frequency of 2.2GHz. It has a built - in AI accelerator NPU with a computing power of up to 6 TOPS, supports the hard acceleration of the latest large - model engine Transformer architecture and multiple deep - learning frameworks. It comes with the Android 14.0 operating system and can also support the Linux/OpenHarmony operating systems. It supports 4K@120Hz ultra - high - definition display and is equipped with rich expansion interfaces. It is mainly applicable to fields such as edge computing, AI robots, AI cloud servers, and various high - performance AIoT devices on the terminal side.

## 1.2 Appearance and Interface Schematic Diagram

### Appearance Pictures:



Interface Schematic Diagram:



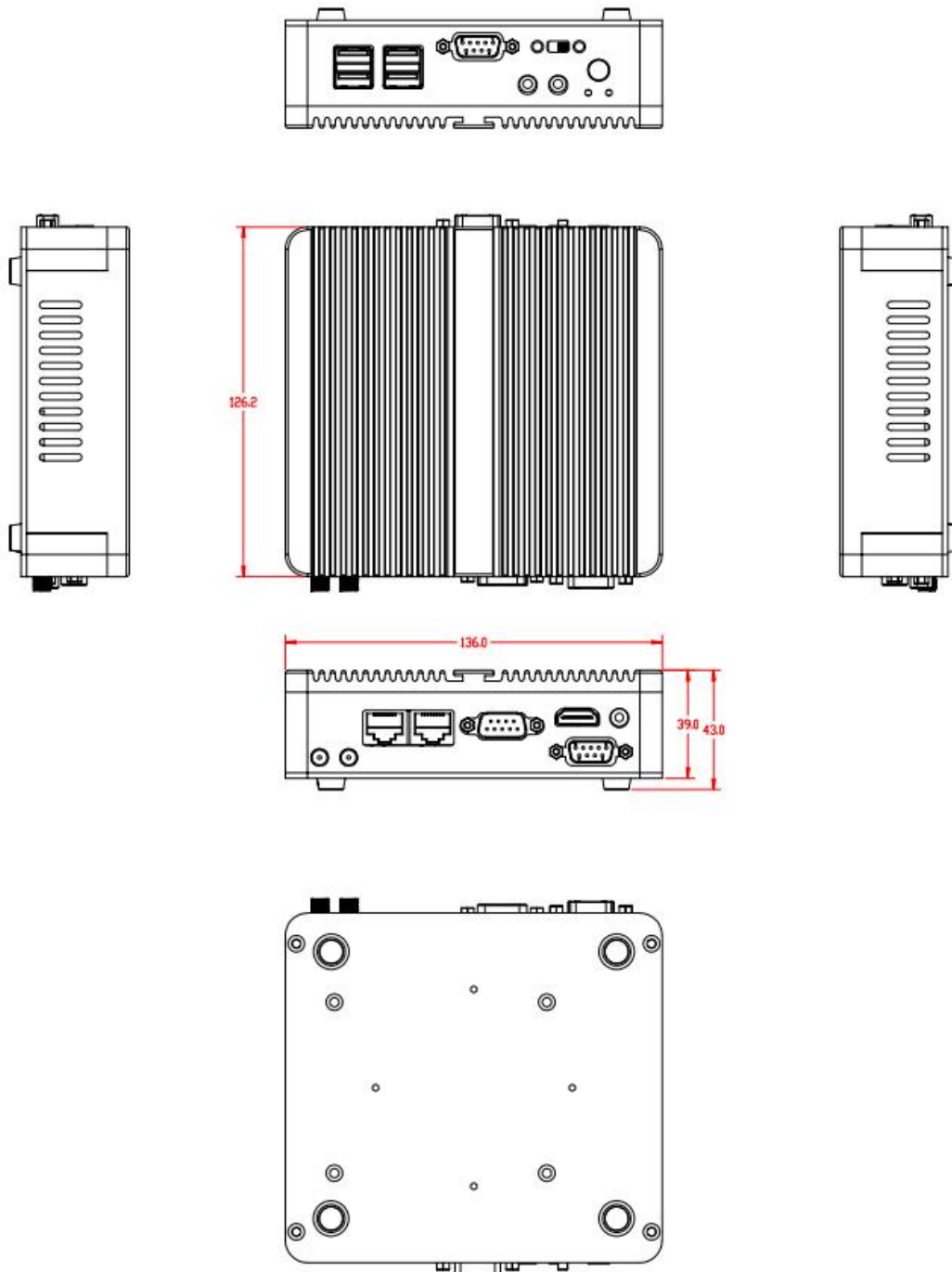
# Chapter 2 Product Specification

## 2.1 Specification Sheet

Product Specification Sheet		
Core Parameters	CPU	RK3576, Eight-core processor (4*Cortex-A72 + 4* Cortex-A53),with a maximum clock speed of 2.2GHz
	GPU	ARM Mali G52 MC3
	NPU	6 TOPS
	Operating System	Android 14
	Storage	64GB (other specifications are available upon request)
	DDR Memory	8GB (other specifications are available upon request)
Internet	WiFi	Support WiFi6
	Bluetooth	BT5.4
	4G	Supports 4G module for Internet access
	Ethernet	1,10M/100M/1000M self - adaptive Ethernet port. 1,100M Ethernet port
	Antenna	1, SMA antenna interface. 1, WiFi antenna
Display Interface	HDMI OUT	Supports 1-way HDMI output, with a maximum support of 4K@120Hz
External Ports	USB 3.0	1USB3.0 (current limit 1.5A)
	USB 2.0	2USB2.0 (current limit 1A)
	USB-OTG	1USB3.0 (default OTG, current limit 1.5A)
	Audio Interface	1 * LINE IN, 1 * LINE OUT, using a 3.5mm, three-segment headphone jack
	RS232	3RS232 interfaces, using DB9 interfaces
	RS485	1RS485 interface, built into the DB9 (COM1) interface
	I/O	2-channel GPIO, with 1 channel for input and 1 channel for output by default, built into the DB9 (COM1) interface. The SW switch position can be customized for interfaces(Optional)

	CAN	1CAN interface, built into the DB9 (COM3) interface
	Relay	1-channel relay, built into the DB9 (COM3) interface
	SIM Card	1*Nano-SIM card interface, supporting various standards (depending on the 3G/4G module). Nano SIM Card Size: 12mm x 9mm. Execution Standard: ETSI TS 102 221 V11.0.0
Internal Ports	Mini PCI-e	Built-in PCI-E 4G module interface. It supports multiple PCI-E 4G modules from Huawei, ZTE, Longsung, etc., and enables Internet access
Power supply	Input Voltage	DC 12~24V ( $\pm 10\%$ )
	Quiescent Power Consumption	20W (TYP.)
	Fan	/
Environmental Parameters	Operating Temperature	0°C~60°C
	Operating Humidity	8%~90%RH, no condensation
	Storage Temperature	-20°C~70°C, normal temperature storage is recommended
	Storage Humidity	10%~95%RH
Reliability	Vibration Protection	IEC 60068-2-64, random, 5 ~ 500 Hz, 1 hr/axis
	Shock Protection	IEC 60068-2-27, half-sine wave, duration 11ms
	EMS Electrostatic Discharge Immunity	GB17626.2-2018 IEC61000-4-2 Class 4 standard. Contact discharge 4KV / Air discharge 8KV
	EMS Lightning Surge	GB17626.5-2019 $\pm 2KV$
	Certification	/
	Waterproof	/
Appearance Information	Dimensions	136(H)*126.2(W)*43(D)mm
	Appearance Color	Black matte color
	Supported Installation Methods	Horizontal placement or wall-mounted installation
Packing List	1 box, 1 instruction manual, 1 certificate of conformity (subject to actual delivery)	

## 2.2 Product Dimensional Drawing (Unit: MM)



# Chapter 3 Non-standard Interface


## Instructions

### 3.1 Interface Definition of Non - standard Multifunctional Connectors

**1.This connector contains one RS232 and one RS485, and the corresponding nodes are:**

- 1) RS232: ttyS11 , 2) RS485: ttyS6

NO.	Definition	Attribute	Description
1	COM1_BUS_DET	Input	Bus insertion detection, with built-in pull-up. The peripheral needs to be grounded
2	232-RX	Input	232_RX11
3	232-TX	Output	232_TX11
4	485-A	Input/Output	TX6
5	GND	Ground line	Ground Line
6	485-B	Input/Output	RX6
7	IO2_IN	Input	GPIO4_A4
8	IO1_OUT	Output	GPIO0_C4
9	VCC	Power Supply	5V output




COM 1

**2.This connector contains one RS232 and one CAN, and the corresponding nodes are:**

- 1) RS232:ttyS5 , 2)CAN


No.	Definition	Attribute	Description
1	COM2_BUS_DET	Input	Input Bus insertion detection, with built-in
2	232-RX	Input	232_RX5
3	232-TX	Output	232_TX5
4	CAN_H	Input/Output	CAN_H
5	GND	Ground Line	Ground Line
6	CAN_L	Input/Output	CAN_L
7	COM1	Input/Output	Relay common terminal
8	JDQ_NO1	Output	Relay Interface
9	VCC	Power Supply	5V Output



COM 3

**4.This connector contains an RS232, and the corresponding node is:**

2) RS232:ttyS9

No.	Definition	Attribute	Description	
1	Empty Pin			
2	232-RX	Input		232_RX9
3	232-TX	Output		232_TX9
4	Empty Pin			
5	GND	Ground Line		Ground Line
6	Empty Pin			
7	Empty Pin			
8	Empty Pin			
9	Empty Pin			

## Chapter 4 Precautions

Please carefully read the instructions and safety precautions of this guide and strictly follow them during use. This will help prevent damage to the host, extend its service life, ensure your normal use and maintenance of the host, and guarantee your personal safety.

- Please first understand the relevant documents included with the product. If there are inserts, be sure to read them first.
- Comply with all safety warnings and signs on this product.
- Use the original power adapter or only use this product with the power type specified for this product.
- During thunderstorms, do not plug or unplug conductors that may be connected to the outside world, such as network cables and power cords.
- Unplug the power supply before cleaning this product. Do not use liquids, sprays, or wet rags for cleaning.
- Please do not disassemble the device privately or attempt to repair this product on your own. Such work should be carried out by authorized professionals.
- Do not place the host near a heat source.
- Pay attention to moisture prevention. Do not spill water or other liquids on the host. In case of the following situations, immediately unplug the power supply of the host.
- The following special situations require professional maintenance.
  - 1、 The power cord or plug is damaged.
  - 2、 Conductive liquid has splashed into this product.
  - 3、 The product has been dropped or its housing is severely damaged.
  - 4、 The product shows unexplained errors or significant performance changes, and the problem cannot be resolved even after following the regular troubleshooting guide.

### Declaration:

1. Technical specifications are subject to change without prior notice. Our company reserves the final right of interpretation for the instructions in this manual.
2. When the product is exposed to strong radio interference (such as electromagnetic fields, static electricity, or line noise), it may malfunction. Please ensure that the product is used in a normal environment.

# Chapter 5 Common Fault Troubleshooting

All products undergo strict testing before leaving the factory, making them durable. The problems encountered during use are likely due to settings and operations during your usage process, or issues such as device compatibility. This common troubleshooting information can help you promptly resolve some simple operation problems or identify the causes of malfunctions that require repair.

1	The host fails to enter the system after startup	<ol style="list-style-type: none"> <li>1.Please confirm that the host and the monitor are properly powered, and check if the host adapter is energized.</li> <li>2.Check if the status indicator lights are functioning correctly.</li> <li>3.For some models of the host, you need to press a button to start it.</li> </ol>
2	The host shuts down automatically without any reason.	<ol style="list-style-type: none"> <li>1.Please check if the power supply is interrupted and if the power adapter is loose.</li> <li>2.Check if the scheduled on/off function is enabled.</li> <li>3.Check if the application has initiated the shutdown.</li> </ol>
3	The host restarts automatically without any reason	Please check if the one - key restore button is toggled to the side closer to the outside of the board (normally it should be closer to the inside of the board).
4	When playing a video, the image is displayed, but there is no sound	Check if the audio output settings match (Codec/HDMI), and whether the volume is muted.
5	The network cannot be connected	Check if the network connection or the router is normal, and if the network parameter settings are correct.

**Note:**

1.If the host accidentally gets wet with water or conductive liquid, immediately cut off the power supply, dry the liquid with a tissue. Do not use a hot air blower to dry it. In case of severe damage, it is recommended to contact the after - sales service immediately for consultation or send it for repair.

2.If the host accidentally drops and causes damage such as deformed casing or damaged motherboard, please contact the after - sales service immediately for repair.