



AIB-2941M

Edge AI controller with expandable AI acceleration modules, Metal Case

Features

- M.2 Key B connector with USB interface for AI accelerator modules
- M.2 Key M connector with PCIe interface for AI accelerator modules/SSD
- Compact-sized with high AI computing performance
- Supports 4G/5G/LoRa/NB-IoT wireless connection
- Rich I/O Expansion Ability (RS-232/RS-485, Ethernet)
- Operating Temperature: -20 ~ +70 °C



Introduction

The AIB-2941M controller is a fanless, secure, compact, low-power edge AI computing device powered by an ARM-based CortexR-A72 processor. Equipped with peripherals such as GbE LAN, HDMI, USB 3.1, DIO and 4G/5G/LoRa/NB-IoT wireless connectivity. Through the AI accelerator module, AI computing capabilities can be expanded, and AI and edge computing can be introduced into industrial applications. A wide range of I/O expansion boards can be used for expansion. Rugged stainless steel housing and heat dissipation make it suitable for operation in -20 to +70°C environments.

Ubuntu OS

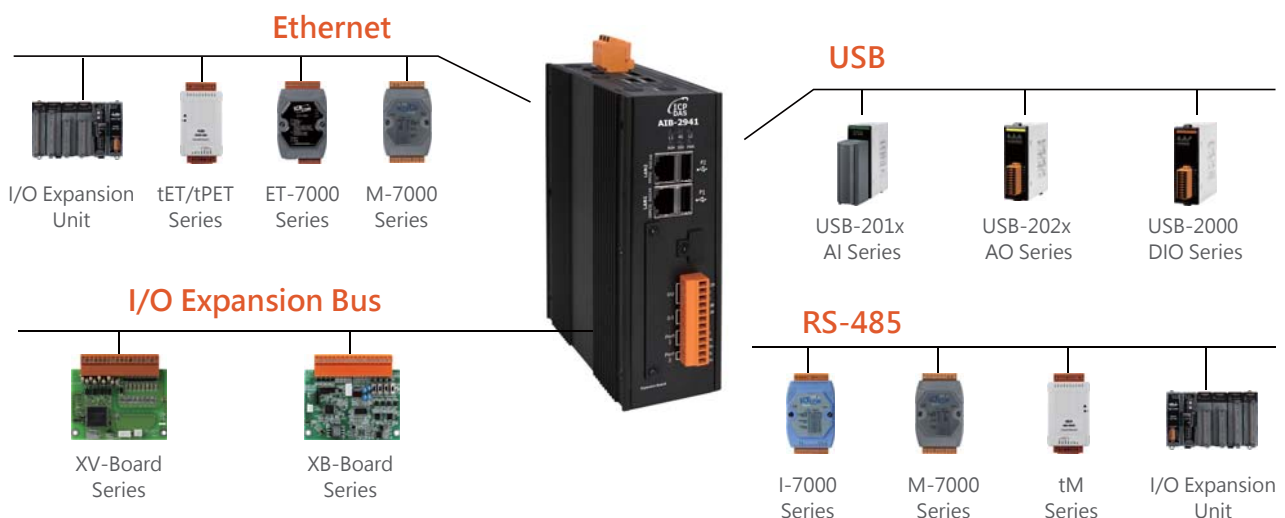
Ubuntu is an easy-to-use operating system that is well-suited for both beginners and experienced users. It features an intuitive interface and a wealth of functionalities, making it versatile for various purposes and one of the most widely used Linux distributions.

When applied to AIB-2941M, it can fully leverage its capabilities and performance. Here are some key aspects of Ubuntu:



- Exceptional User Experience
- Ease of Use, Versatility, and Security
- Rich Community Support
- Embedded Services: Includes Web Server, FTP Server, Telnet Server, SSH Server.
- Comprehensive Software Support and Development Tools: Offers dedicated SDKs, Perl, Java, GUI software, and more.

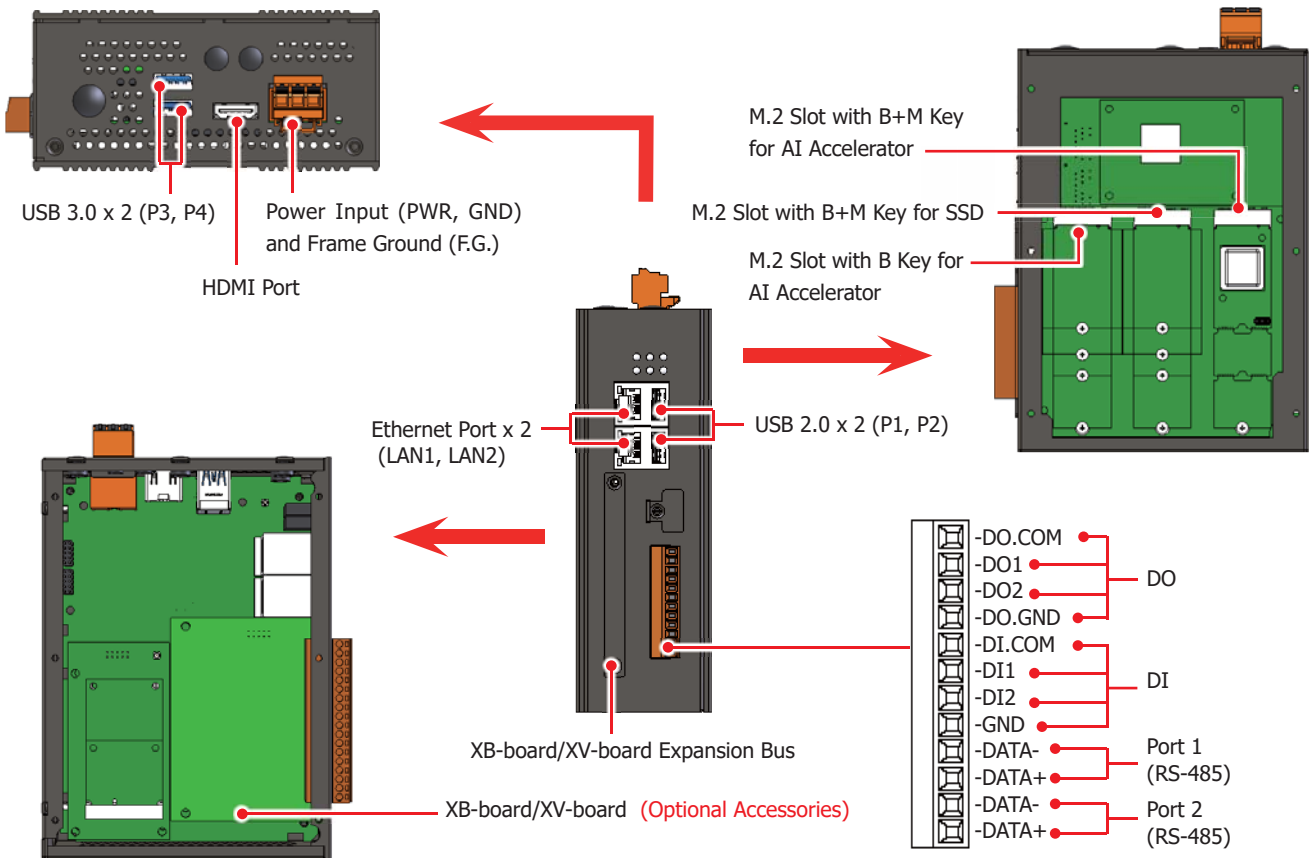
Applications



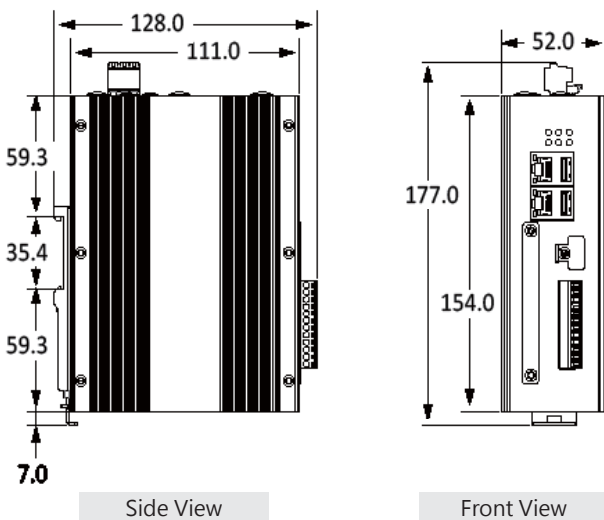
Specifications

Software	
OS	Standard Raspberry PI 4 64-bit OS(default) / Ubuntu operating system
SDK Provided	C / Python library
Multilanguage Support	English, Simplified Chinese, Traditional Chinese
CPU Module – Raspberry Pi CM4	
CPU	Quad-core Cortex-A72 (ARM v8) 64-bit SoC @ 1.5GHz
GPU	VideoCoreVI (OpenGL ES 3.0, H.2654 HEVC (4Kp60fps decode), H.264 (1080p60fps)
SDRAM	4GB LPDDR3
Storage	On-board 32GB eMMC
Other Peripherals	
Other Storages	M.2 Key M connector x 1 for PCIe SSD 2230/2242/2260/2280 (Without M.2 SSD card)
FRAM	64 KB
RTC (Real Time Clock)	Provide seconds, minutes, hours, dates, day of week, month, year
Watchdog Timer	Yes
Display	
Display	HDMI port x 1 (4Kp 60fps with Audio)
LED Indicators	6 LED indicators for Power and Running; 3 LED for user defined
Communication Ports	
Ethernet	2 x RJ-45, 10/100/1000 Based-TX (Auto-negotiating, Auto MDI/MDI-X, LED indicators)
USB 2.0 (host)	2
USB 3.0 (host)	2
Serial port 1	RS-485 (Data+, Data-); 2500 VDC isolated
Serial port 2	RS-485 (Data+, Data-); 2500 VDC isolated
Wireless	Mini-PCIe connector x1 for 4G/5G/L0Ra/NB1oT (USB2.0 interface) (Optional) with Nano SIM slot x 1 (Optional)
Digital Input	
Channels	2
Type	Wet Contact
Sink/Source (NPN/PNP)	Sink/Source
ON Voltage Level	+19 VDC ~ +24 VDC
Channels	+11 VDC Max.
Digital Output	
Channels	2
Type	Isolated Open Collector
Sink/Source (NPN/PNP)	Sink
Load Voltage	+24 VDC
Load Current	100 mA/Channel
Overvoltage Protection	60 VDC
Overload Protection	1.1 A
Short-circuit Protection	Yes
AI Accelerator modules	
M.2 connector Key M	M.2 Key M Connector (PCIe x1) x1 for Hailo-8™ M.2 AI Acceleration Module (Optional) 2230/2242/2260/2280; Frameworks: TensorFlow/Lite, ONNX, Keras, & Pytorch
M.2 connector Key B	M.2 Key B Connector (USB3.0 Interface) x1 for M.2 AI Acceleration Module(Optional) 2230/2242/2260/2280; Frameworks: TensorFlow/Lite, Caffe, Keras, & Pytorch
Other	
Audio	Mic-In x 1 and Line-Out x 1 (Optional)
I/O Expansion	
I/O Type	One XV-board / eXV-board (Optional)
Mechanical	
Casing	Metal
Cooling Type	CPU Heat Sink / Fanless
Dimension (W x L x H)	52 mm x 177 mm x 128 mm
Installation	DIN-Rail, Wall mounting
Environmental	
Operating Temperature	-20 ~ +70 °C
Storage Temperature	-40 ~ +80 °C
Humidity	10 ~ 90 % RH, Non-condensing
Power	
Input Range	+12 ~ 48 VDC
Consumption	4.8 W (0.2 A @ 24 VDC)

Appearance



Dimensions (Units: mm)



Accessories

AI Accelerator Module



Edge AI controller with expandable AI acceleration modules, Metal Case (RoHS)

XB-board/XV-board

I/O Expansion Board for expanding I/O channels, COM Ports, memories or hardware functions.



Ordering Information

AIB-2941M CR	Edge AI controller with expandable AI acceleration modules, Metal Case (RoHS)
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