ICP DAS

AIB-2541M │ AIB-2541M/S1

Edge AI controlle, Metal Case

■ Features

- M.2 Key M: PCIe interface for AI accelerator modules/ SSD
- Compatible with 13 TPOS Hailo 8 Lite AI Accelerator(Equipped with AIB-2541M/S1)
- Built-in multiple communication interfaces (Ethernet x 2, USB x 4, RS-485 x 2)
- 2-CH isolated DI and 2-CH isolated DO
- Support HDMI output 4k display
- I/O Expansion Bus

CE UKCA RoHS

■ Introduction

The AIB-2541M series controller is a fanless, secure, compact, low-power edge AI computing device powered by an ARM-based CortexR-A76 processor. Equipped with peripherals such as GbE LAN, HDMI, USB 3.1, DIO and 4G 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.
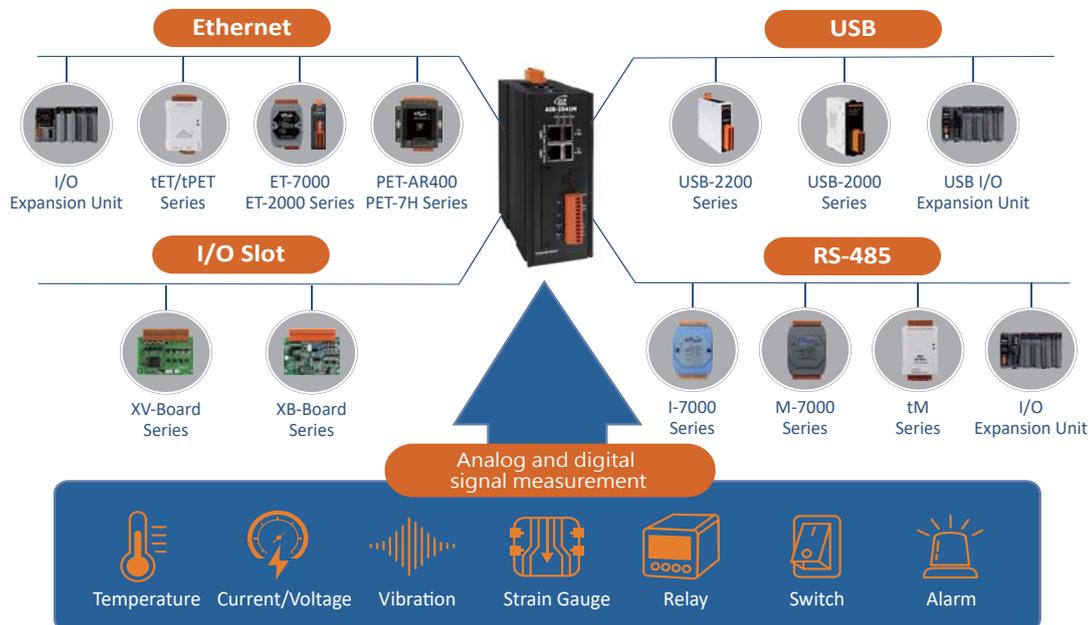
■ Ubuntu OS

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-2541M, it can fully leverage its capabilities and performance. Here are some key aspects of Ubuntu:

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

■ Appications

Ethernet
- I/O Expansion Unit
- tET/tPET Series
- ET-7000 ET-2000 Series
- PET-AR400 PET-7H Series

USB
- USB-2200 Series
- USB-2000 Series
- USB I/O Expansion Unit

I/O Slot
- XV-Board Series
- XB-Board Series

RS-485
- I-7000 Series
- M-7000 Series
- tM Series
- I/O Expansion Unit

Analog and digital signal measurement

Temperature Current/Voltage Vibration Strain Gauge Relay Switch Alarm
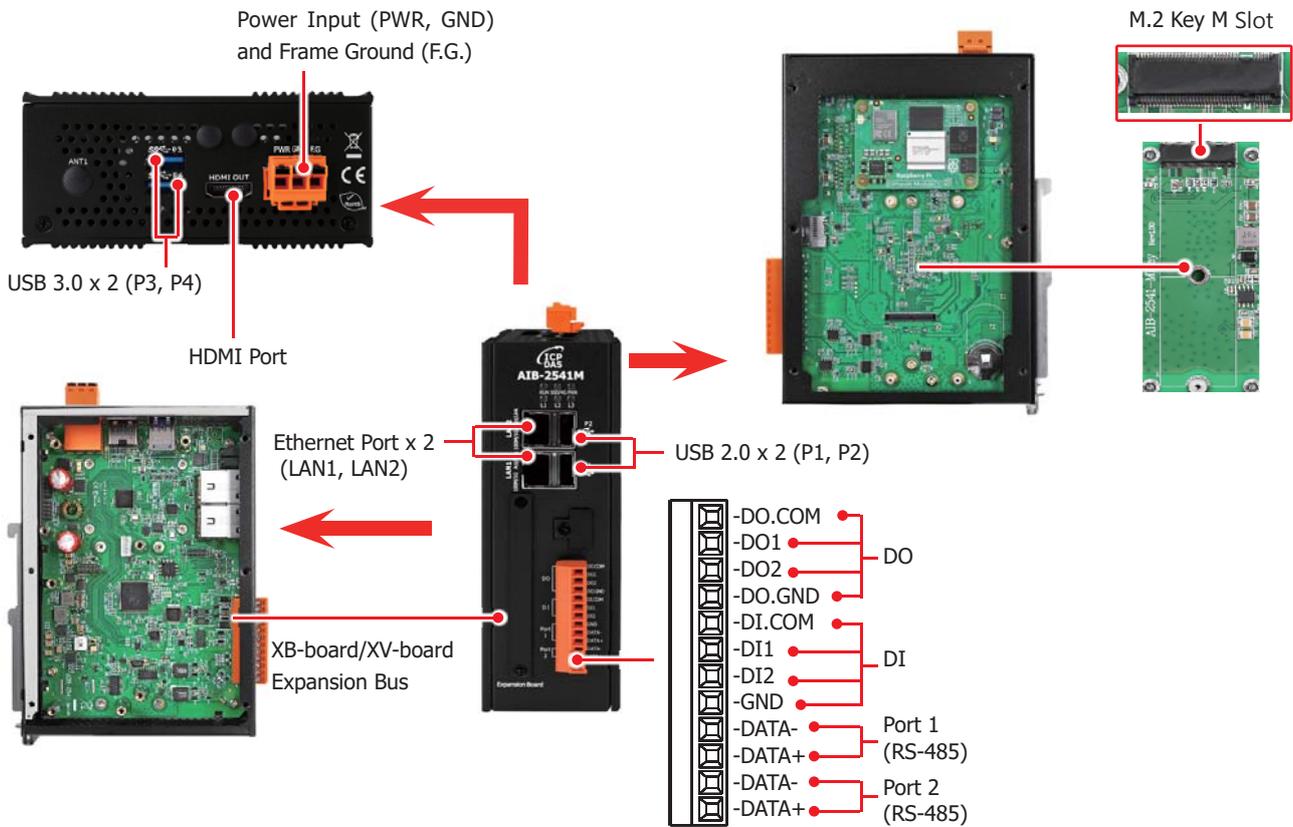
■ Specifications

Software	
OS	Ubuntu OS
SDK Provided	C / Python library
Multilanguage Support	English, Simplified Chinese, Traditional Chinese

CPU Module	
CPU	Quad core Cortex-A76 (ARMv8) 64-bit SoC @ 2.4GHz
64-bit Hardware Serial Number	Yes
System Memory	4GB LPDDR4 SDRAM
Storage	On-board 64 GB eMMC
Non-Volatile Memory	128 KB FRAM
Real Time Clock	Provide second, minute, hour, date, day of week, month, year
Watchdog Timer	Yes

Display	
GPU	OpenGL ES 3.1 graphics, Vulkan 1.2, 4kp60 HEVC decode
Signal	HDMI port x 1 (4Kp 60fps with Audio)
LED Status	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 Port	2 x USB 2.0 (host), 2 x USB 3.0 (host)
COM Port	RS-485 x 2, (Data+, Data-); 2500 VDC Isolated

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
Load Voltage	+24 VDC
Load Current	100 mA/Channel
Overvoltage Protection	60 VDC
Overload Protection	1.1 A
Short-circuit Protection	Yes

Audio	
Jack	Mic-In x 1 and Line-Out x 1 (Optional)

Mechanical	
Casing	Metal
Cooling Type	CPU Heat Sink / Fanless
Dimension (W x L x H)	56 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	8.5 W (0.35 A @ 24 VDC)

📁 Specifications

Model	AIB-2541M	AIB-2541M/S1
AI Accelerator		
Model Number	-	Hailo 8 Lite
AI frameworks	-	TensorFlow, TensorFlow Lite, Keras, PyTorch & ONNX
TOPS	-	13
Runtime	-	Hailo RT Rev. 4.23, pre-installed
Power Consumption	-	1.5 W
I/O Expansion		
Slots	1x XV-board/XB-board/eXV-board (Optional) 1x M.2 key M	

📁 Appearances

Power Input (PWR, GND) and Frame Ground (F.G.)

M.2 Key M Slot

USB 3.0 x 2 (P3, P4)

HDMI Port

Ethernet Port x 2 (LAN1, LAN2)

USB 2.0 x 2 (P1, P2)

XB-board/XV-board Expansion Bus

-DO.COM
-DO1
-DO2   DO
-DO.GND
-DI.COM
-DI1
-DI2   DI
-GND
-DATA-   Port 1
-DATA+   (RS-485)
-DATA-   Port 2
-DATA+   (RS-485)

📁 Dimensions (Units: mm)

128.0
111.0
59.3
35.4
59.3

56.0
177.0
154.0

Side View   Front View
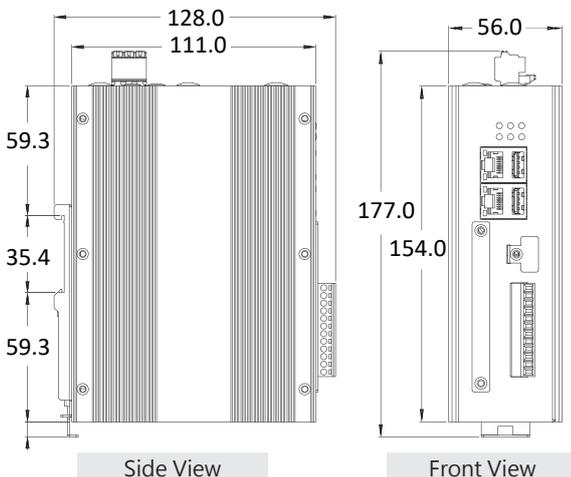
📁 Accessories

XB-board/XV-board

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

📁 Ordering Information

AIB-2541M CR	Edge AI controller, expandable AI accelerator (RoHS)
AIB-2541M/S1 CR	Edge AI controller, includes AI accelerator (Hailo 8 Lite, TOPS=13) (RoHS)