

Akida 1000 and 1500 M.2 Reference Board *User Guide*

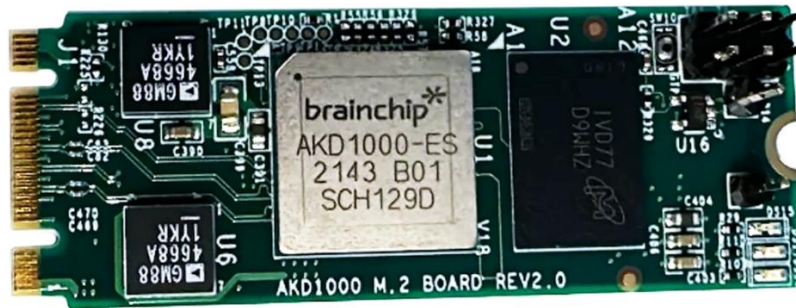


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Version 1.0

1 INTRODUCTION

This Akida Evaluation Board is an M.2 board for Akida technology assessment. It includes either the AKD1000 or AKD1500 Akida processor from BrainChip. For the Akida PCIe board, please see the separate user guide.

Note: Power measurement is not available on the M.2 boards. Power measurement is supported only on the AKD1000 & AKD1500 PCIe boards, which include onboard current-monitoring hardware.



Figure 1.1: Akida1000 M.2 Card



Figure 1.2: Akida1500 M.2 Card

1.1 Specifications

	AKD1000	AKD1500
Form Factor	M.2 2260, M or E Key	M.2 2230, M or E Key
Host Interface	PCIe gen 2 PHY 2-lane	PCIe gen 2 PHY 2-lane
Memory Interface	LPDDR4 via DMA	None
CPU	32bit ARM M.4	None
NPU	20 x Akida 1 Neuron Mesh	8 x Akida 1 Neuron Mesh
Raw TOPS	1.5 TOPs (INT8)	0.82 TOPs (INT4)
On-chip memory	8MB high-speed near compute SRAM	1MB high-speed on-chip memory
Clock Frequency	300MHz	400MHz
Operating Temperature	0°C - 70°C	-40°C - 70°C
Thermal Solution	No fan or heatsink required	No fan or heatsink required
Typical Application Power	1W	250mW typical at 400 MHz

2 INSTALLATION STEPS

2.1 PREREQUISITE

Computer

An x86-64 PC architecture, such as any intel, i5, i7, i9 based computer.
Or an aarch64 machine architecture such as a Raspberry Pi Compute Module 4/5 with IO Board.

OS

Linux Ubuntu 16.04, 18.04 and 20.04, 2204, 2204

Note: Check the [drivers](#) section for more information on OS support.

Slots

Any modern NVMe-capable M.2 slot (PCIe x4)

2.2 CONNECT THE MODULE

Important: Power down your computer before installing the board.

Unscrew the mounting screw at the far end of the slot. Align the notch on the module with the slot and gently slide it into the connector until fully seated. Secure the module by gently pushing the free end down flat so it is lined up with the standoff. Finally, replace and tighten the screw so it is snug and not overly tight.

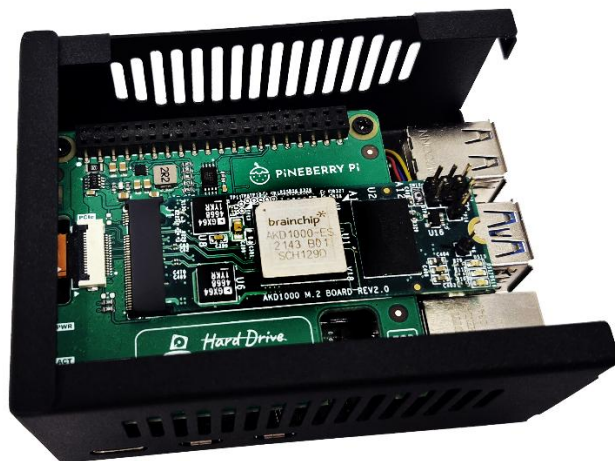


Figure 2: M.2 Module Installed Inside a Raspberry Pi 5

2.3 INSTALL THE DRIVER

For instructions on installing the Akida PCIe driver, please see the relevant documentation [here](#).

Alternatively, you can download the drivers directly from the BrainChip GitHub page. https://github.com/BrainchipInc/akida_dw_edma

2.4 INSTALL AKIDA

MetaTF development details can be found at <https://doc.brainchipinc.com/index.html>

3 TROUBLESHOOTING

3.1 RUNNING ISSUE

If the system is stuck or if your applications do not run after performing the required steps in this user guide, reboot the system.

3.2 COMMAND “*lspci*” GIVES NO RESULTS

If, when entering: **lspci**
at the command prompt, nothing is displayed.

Your Akida board may be wrongly inserted into bus slot.

Do the following

- Turn your machine totally off.
- Remove and re-insert the module into your M.2 slot.
- Restart your machine.

3.3 META TF VERSION COMPATIBILITY

If you have installed the new PCIe driver from our GitHub with no main issues, but Akida refuses to ‘see’ the board (when entering **akida devices** at the command prompt, nothing is displayed).

It’s likely because you’re using an old version of MetaTF. You must upgrade your MetaTF version to any version greater than or equal to 2.2.0. We recommend that you update MetaTF to the latest released one: <https://pypi.org/project/akida/>