

User Manual

**Nvidia Jetson Series Carrier board
Aetina AN810**

Document Change History

Version	Date	Description
V1.0	2020/08/28	Initial Release.
V1.1	2020/9/2	Correct CN2 pin-define and description.
V1.2	2020/9/21	Correct component's description.
V1.3	2023/07/07	M.2 M-key 2280 will not support mSATA function.

1. Introduction

Support for NVIDIA® Jetson Xavier™ NX. You can quickly emulate the functionality of your desired end product for software development and hardware verification.

To build a functional prototype of your target system you will need:

- NVIDIA® Jetson Xavier™ NX module (Aetina's P/N: NSO-MD-XNX)
- Carrier board (Aetina's P/N: AN810)
- Power adaptor 12~19V DC

1.1 Features

- Specifically designed for high performance and low-power envelope AI computing
- Extended temperature range -40°C to 85°C (Motherboard Only)
- Suitable for general robotics, Drone, UAV, industrial inspection, medical imaging and deep learning

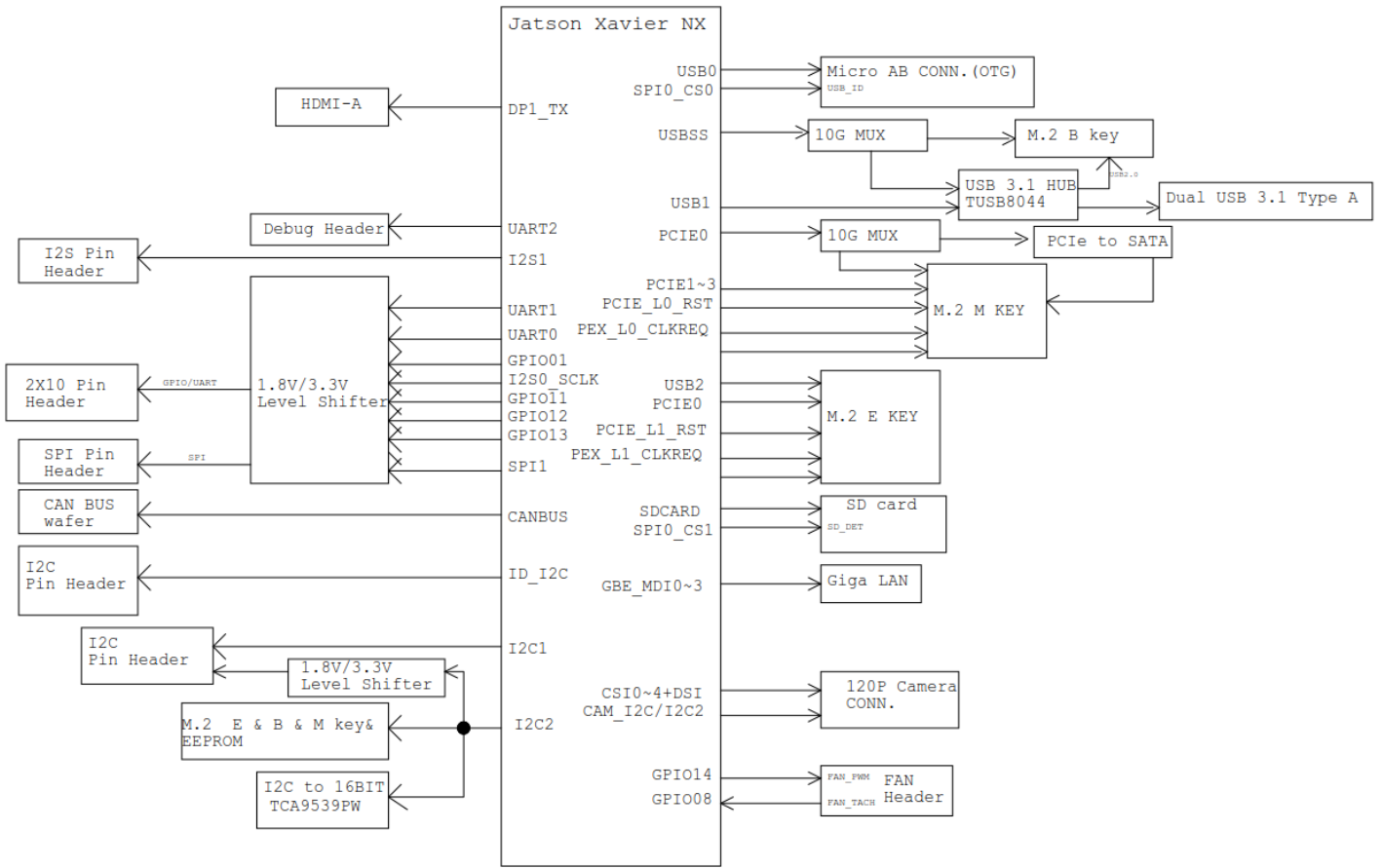
1.2 Board

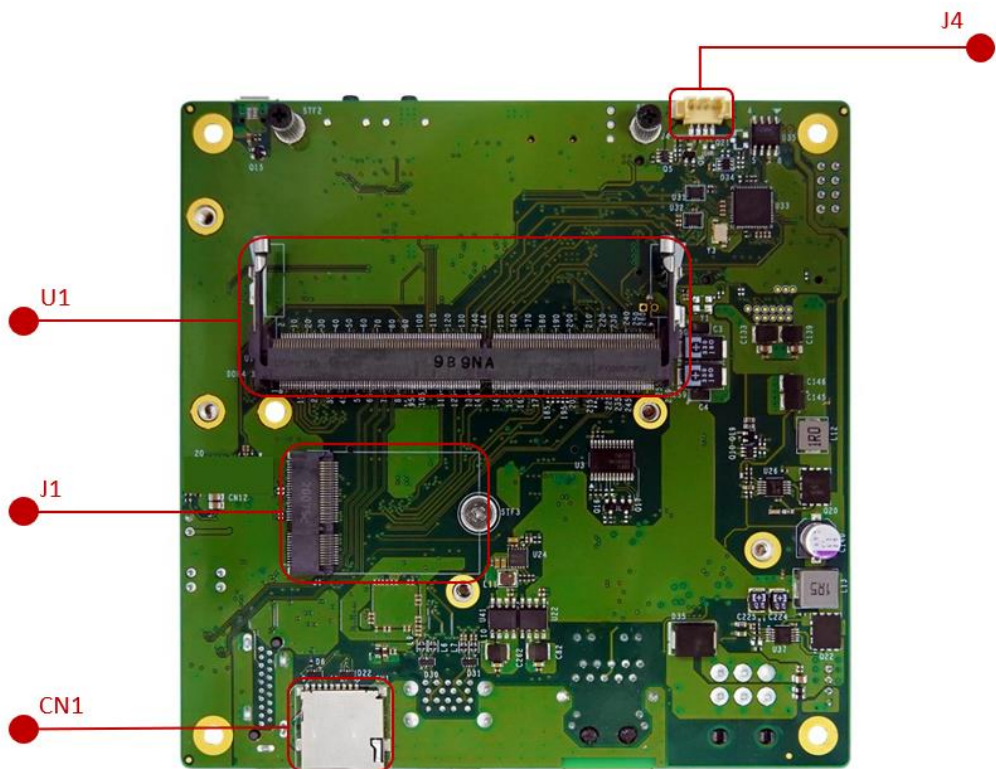
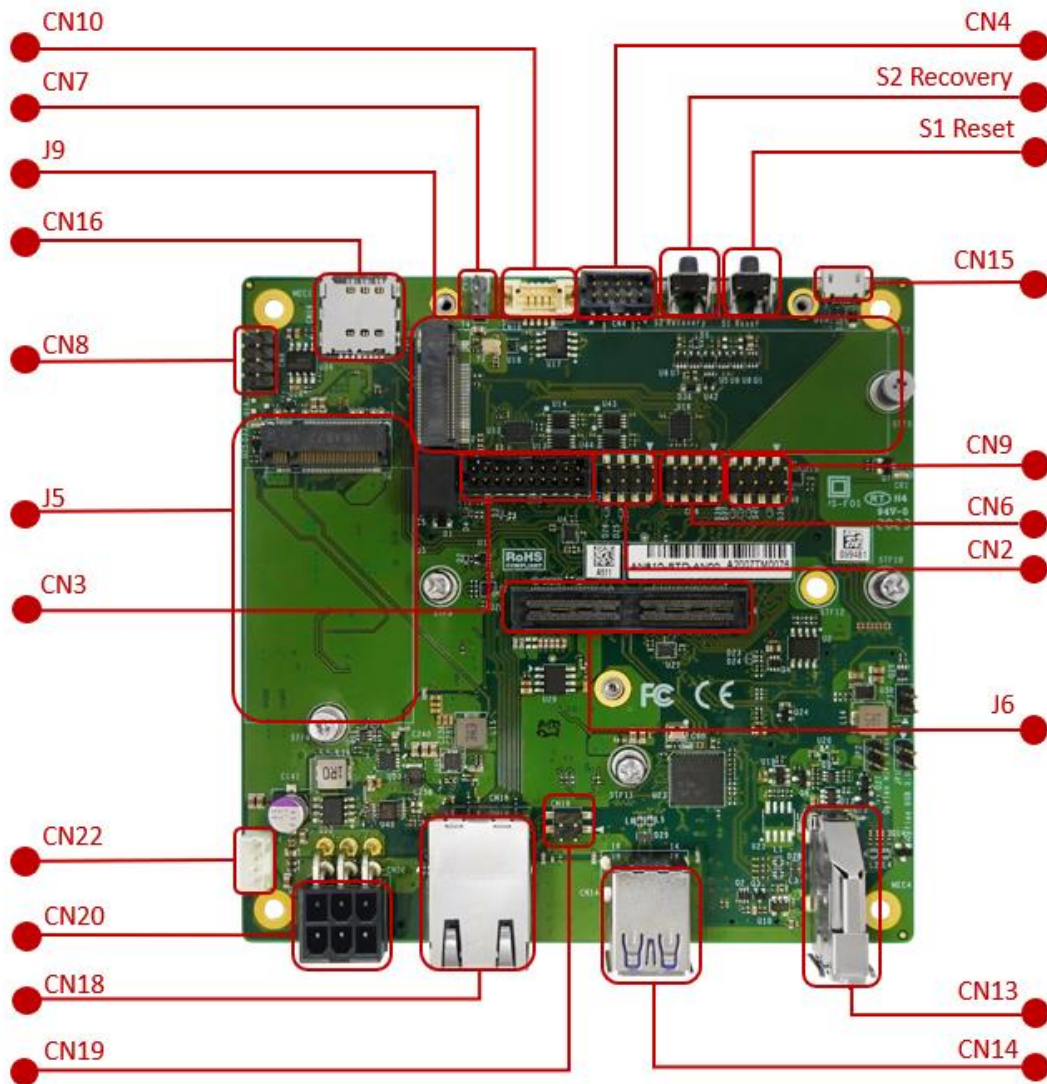
- 8-layer printed circuit board(PCB)
- Physical dimension: 120mm x 120mm

2. Board Specification

Specification	AN810 Description
Module Compatibility	- NVIDIA® Jetson Xavier™
GPU	- 384-core NVIDIA Volta™ GPU with 48 Tensor Cores
CPU	- 6-core NVIDIA Carmel ARM®v8.2 64-bit CPU 6MB L2 + 4MB L3
Dimension	- 120mm x 120mm
Display	- 1 x HDMI
Ethernet	- 1 x Gigabit Ethernet
USB	- 2 x USB3.2 Gen1 Type A - 1 x USB2.0 Micro AB(OTG Only)
SD CARD	- 1x Micro SD CARD Slot
SIM	- 1x SIM Slot
Expansion	- 1x M.2 M Key 2280(PCIe x4) - 1x M.2 E Key 2230(USB2.0/PCIe x1) - 1x M.2 B Key 3050(USB3.2 Gen2/USB2.0)
	- 1x 120 Pin Board to board connector for MIPI CSI-II
UART	- 2 x UART
SPI	- 1 x SPI
I2C	- 3 x I2C
GPIO	- 5 x GPIO
CAN Bus	- 1 x CAN Bus
Input Power	- 12-19V DC input
Operating Temperature	- -40°C to + 85°C (Motherboard Only)
Storage Temperature	- -40°C to + 85°C
Warranty	- 14 Months

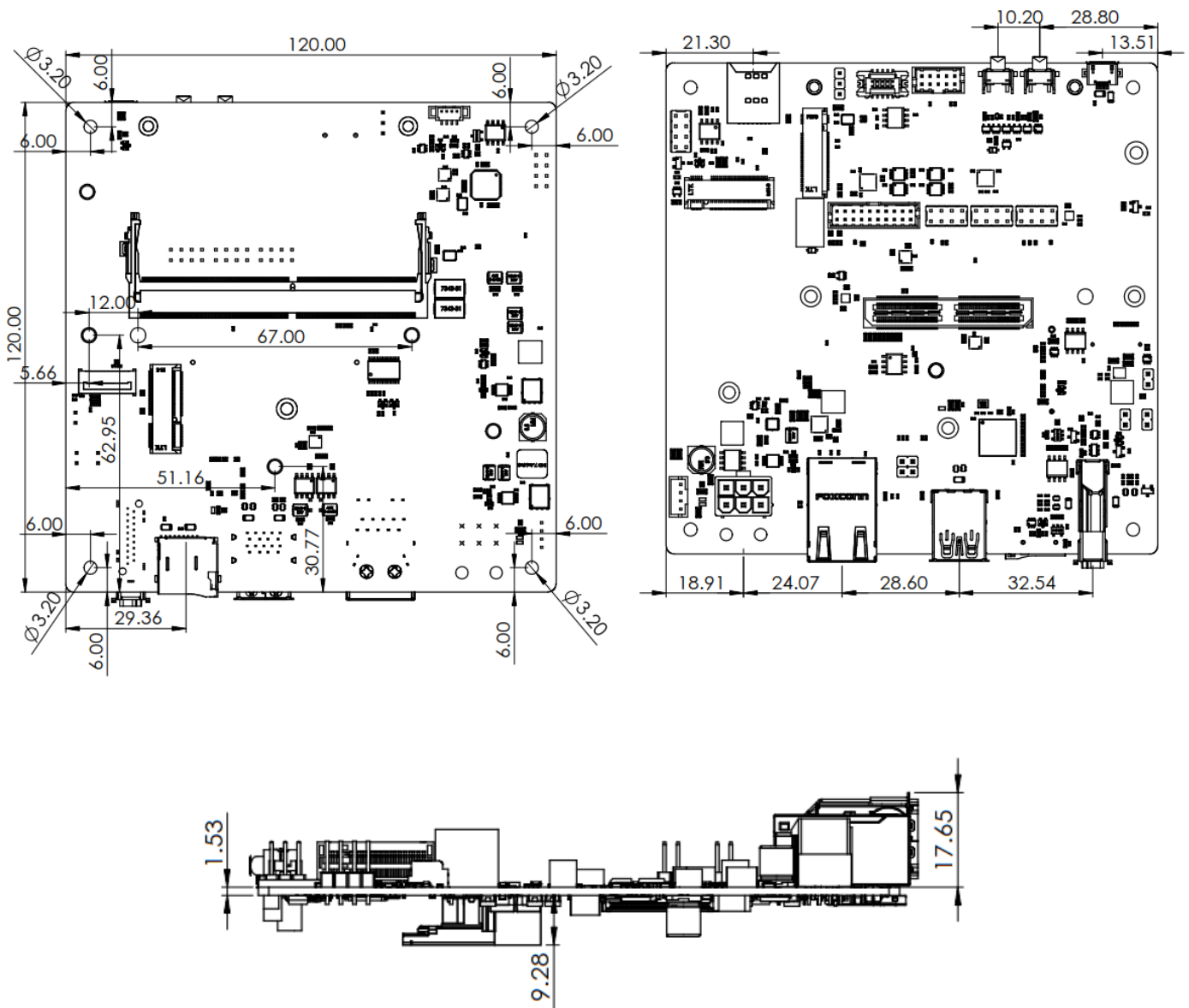
3. Block Diagram





CN10	CAN Bus Connector.
CN7	Debug UART.
J9	M.2 2280 M Key, support PCIe function device.
J5	M.2 3050 B Key, support 4G/5G function device.
CN16	SIM Card Socket.
CN8	Support I2S function.
CN3	Support GPIO, 2x UART function.
CN22	For DC output function device.
CN20	6 pins connector for Power input.
CN18	RJ45 x1, support 10/100/1000M Ethernet
CN19	For PSE power Input.
CN4	Front Panel function.
S2	Recovery button.
S1	Reset button.
CN15	Micro USB AB, OTG function only.
CN9	Support I2C function.
CN6	Support SPI function.
CN2	I2C/Auto Power on switch
J6	120 pin board to board connector for MIPI CSI-2
CN13	HDMI 2.0b Type A
CN14	USB3.2 Gen1 Type A x2 (Downgrade to USB2.0 when install J5)
U1	260pin SO-DIMM
J1	M.2 2230 E Key, support PCIe/USB2.0 function device
CN1	Micro SD device.
J4	FAN power header(5V).

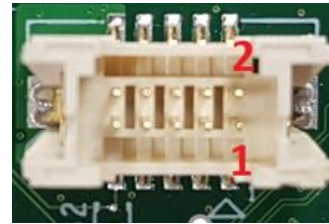
3.2 Mechanical Dimensions



4. Connectors and Pin-outs

4.1 CN10 : CAN Bus

Pin	Define	Pin	Define
1	CAN0H	2	NC
3	CAN0L	4	NC
5	NC	6	NC
7	NC	8	NC
9	NC	10	GND



4.2 CN7 : Debug UART

Pin	Define
1	UART2_RXD_3V3
2	UART2_TXD_3V3
3	GND



4.3 CN8 : I2S

Pin	Define	Pin	Define
1	AUD_MCLK01	2	I2S1_LRCLK
3	I2S1_SDOUT	4	I2S1_SDIN
5	SYS_RST_IN#	6	NC
7	I2S1_CLK	8	GND



4.4 CN3 : UART and GPIO

Pin	Define	Pin	Define
1	UART1_RXD_HDR_3V3	2	UART0_RXD_HDR_3V3
3	UART1_TXD_HDR_3V3	4	UART0_TXD_HDR_3V3
5	UART1_RTS_HDR_3V3	6	UART0_RTS_HDR_3V3
7	UART1_CTS_HDR_3V3	8	UART0_CTS_HDR_3V3
9	GND0	10	GND1
11	GPIO_1	12	GND2
13	GPIO_2	14	GND3
15	GPIO_3	16	GND4
17	GPIO_4	18	GND5
19	GPIO_5	20	GND6



4.5 CN22 : DC-Output

Pin	Define
1	DC-Out
2	DC-Out
3	GND
4	GND



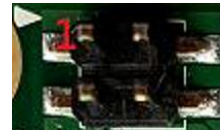
4.6 CN20 : Power input

Pin	Define
1	VDD_INPUT
2	VDD_INPUT
3	VDD_INPUT
4	GND
5	GND
6	GND



4.7 CN19 : PSE power Input

Pin	Define	Pin	Define
1	PSE1+	2	PSE2+
3	PSE1-	4	PSE2-



4.8 CN4 : Front Panel

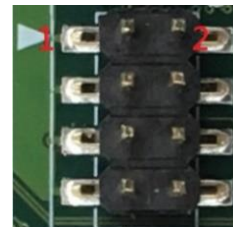
Pin	Define	Pin	Define
1	Power ON	2	GND0
3	Reset	4	GND1
5	Recovery	6	GND2
7	NC	8	GND3
9	LED_POWER_3V3	10	EXT_LED



*** In order to boot up the system, please quickly short-circuit Pin1 and Pin2.**

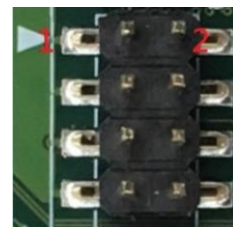
4.9 CN9 : I2C

Pin	Define	Pin	Define
1	VDD_3V3	2	I2C_SDA_2
3	GND	4	I2C_CLK_2
5	VDD_3V3	6	I2C1_SDA
7	GND	8	I2C1_SCL



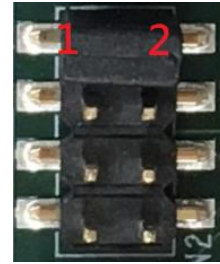
4.10 CN6 : SPI

Pin	Define	Pin	Define
1	SPI1_SCK_3V3	2	NC
3	SPI1_MISO_3V3	4	SPI1_MOSI_3V3
5	SPI1_CS0_3V3	6	SPI1_CS1_3V3
7	VDD_3V3	8	GND



4.11 CN2 : I2C/Auto Power on switch

Pin	Define	Pin	Define
1	LATCH_SET_BUT	2	LATCH_SET
3	VDD_3V3	4	NC
5	VDD_3V3	6	ID_I2C_SDA
7	GND	8	ID_I2C_SCL



Remove Jumper from Pin1 and Pin2 can enable Auto power on function.

4.12 J4 : FAN Power Header

Pin	Define
1	FAN_PWM
2	FAN_TACH
3	FAN_PWR_VDD 5V
4	GND



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