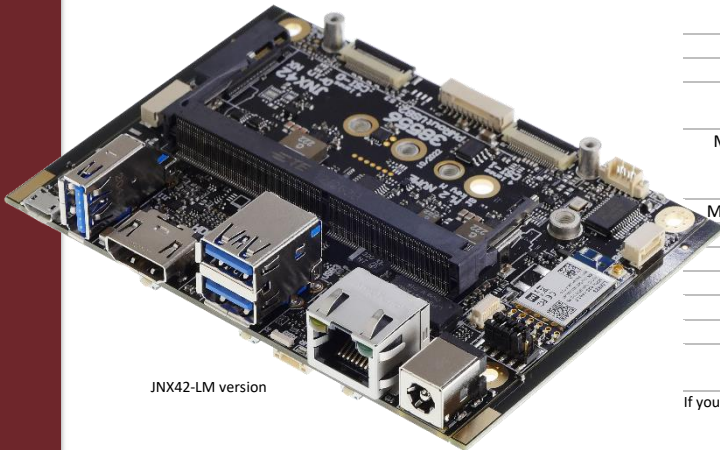# JNX42

NVIDIA Orin Nano, Orin NX and Xavier NX

Overview

The JNX42 is specifically designed for the new Jetson Orin compute modules with 3 native USB 3.2 (10Gbit/s) ports and 3 PCIe busses. At your choice these systems can be equipped with the entire family of NVIDIA compute modules in the SO-DIMM form factor from the traditional Nano to the new Orin NX16.

Features

- Onboard M.2 NVME 2242 or 2280 SSD: mandatory for the Orin Nano/NX family
- M.2 key E for Wifi, GPS and more
- M.2 key B for LTE and 5G (optional: UART communications with MCU for low level system management independent of Linux system)
- industrial strength design
- extendable via USB 2.0 or PCIe x1

JNX42-LM version

Optional*

- IMU
- board EEPROM
- crypto chip
- RTC battery (rechargeable)

*Available with alternative and fully populated versions

System Management

On board MCU for watchdog and low level system management functions (via LTE). The MCU can receive text messages via an UART connection to compatible LTE M.2 cards (e.g. Simcom SIM7600) . With these messages low level system management can be performed. Please note that this requires an optional MCU firmware. The source code to this firmware may be licensed.

- power cycle or reset
- change of boot order

Resources

Description	Link
3D Model	https://auvidea.eu/step/
Auvidea BSP package	https://auvidea.eu/firmware/

Technical Specification

Feature	JNX42-LM	JNX42-M2
modules	Nano/ TX2 NX/ Xavier NX/ Orin Nano/NX	
Orin Nano/NX	3x (native) USB 3.0	
Nano/ Xavier NX	1x (native) USB 3.0 and 2x USB 2.0	
monitor	HDMI 2.0 (4kp60)	
UART	2x (1x when using LTE module)	
SPI	1x (1.8V)	
I2C	3x (3.3V)	
I2S	1x (1.8V)	
CAN	1x (with transceiver TJA1051)	
Buttons	PWR/ Force Recovery/ Reset	
MIPI CSI-2	2x CSI-2 (22 pin with 4 lanes)	
MIPI CSI-2 Xavier NX	Only 1 Port (J5)	
Ethernet	Gigabit RJ45	
MCU	yes (for system management)	
micro-USB	OTG (for flashing) and host mode	
USB2	2x type A	
	1x(J8) shared with M.2 key E slot (do not use if M.2 card is inserted)	
USB3	1x (with Xavier NX)	
LM823 Wifi	Yes	-
M.2 Key B (3042/3052)	for LTE (with dual nano SIM)	
M.2 Key E (2230)	Xavier NX: no function Orin NX: PCIe x1 modules	Xavier NX: USB 2.0 modules Orin NX: PCIe x1 & USB 2.0 modules
M.2 Key M (2280)	PCIe x4 for NVME SSDs	
PCIe x1	22 pin FPC (for PCIe add ons) – not Nano	
fan connector	5V for original NVIDIA heatsink/fan	
PoE	optional with power module	
power in	12V (with the 38515 addon module 12-48V)	
CM power	5V (8A max)	
size	80x104.6mm	
	80x112.6mm (with side wings)	

If you use the compute Module NVIDIA Orin NX than you have 3x USB 3.0 type A.

Compatible addons:

M.2 key E cards:

- Standard M.2 Wifi cards (PCIe+USB) like Intel AX200 (Orin only)
- USB only M.2 Wifi cards like Laird ST60-2230C-UU (Xavier and Orin)
- W200 RTL8111 (in development)
- W210 Ublox Lily (in development)
- W220 Ublox NEO-M8N GNSS module

USB addon modules (for J8 or J23):

- U100 USB 2.0 to 2x M.2 adapter (key E and key B)
- U110 Quad USB 2.0 to 100bT Ethernet (PoE+)
- U115 Quad USB 2.0 to 100bT Ethernet (PoE+) with 48V pushup PS
- U120 USB 2.0 to 4x USB 2.0 type A module

PCIe x1 addon modules:

- 38456 i210 + 4 port GbE Ethernet switch (PoE-PSE) with 48V pushup PS
- 38456-2 RTL8111 + 4 port GbE Ethernet switch (PoE-PSE) with 48V pushup PS (RJ45 or M12 X-Code)
- P101 (38551) FPC to PCIe x1 slot adapter (to use standard PCIe cards)

Carrier Board Variations
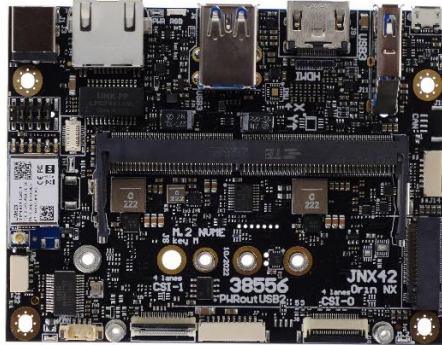
SKU	Part
70784-LM	JNX42-LM
70784-M2	JNX42-M2

JNX42

JNX42 Variations

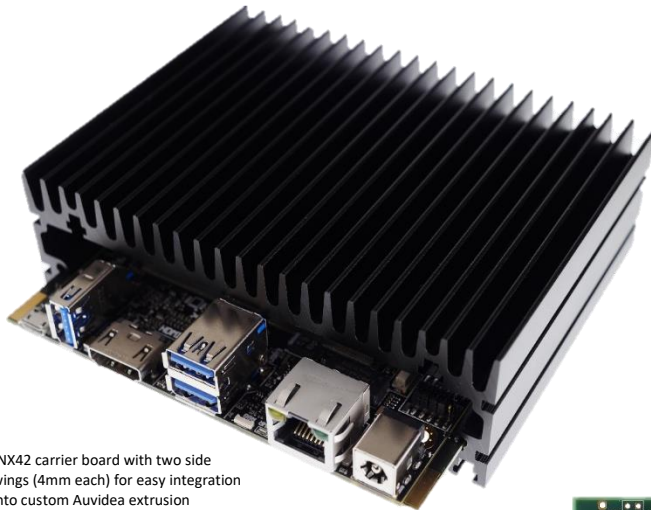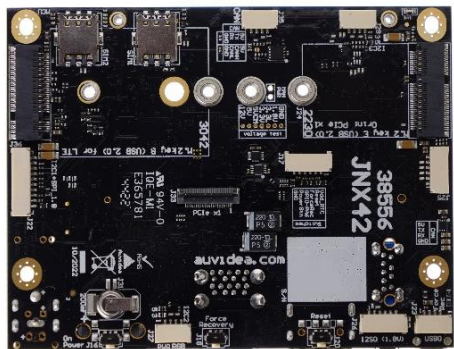| JNX42-LM	JNX42-M2

LM823 Wifi card populated on the left
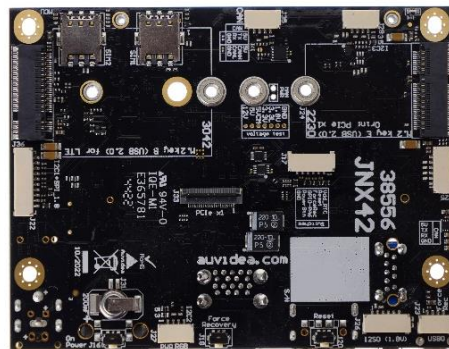
the USB2 connector (J8) is shared with the M.2 key E port


JNX42 carrier board with two side wings (4mm each) for easy integration into custom Auvidea extrusion

Internal USB ports

J23 is located underneath the micro USB port. Both have the same USB 2.0 bus connected. With a DTB change this port can be converted to a host port, to be able to connect to any of the USB addon modules.

J8 is only available with the M2 version. It exposes the USB bus of the M.2 key E slot. Please only use one at a time. This can also connect to any of the USB addon modules.

JNX42 carrier board with the 4 port GbE switch (38456) connected with a 60mm flex PCB cable
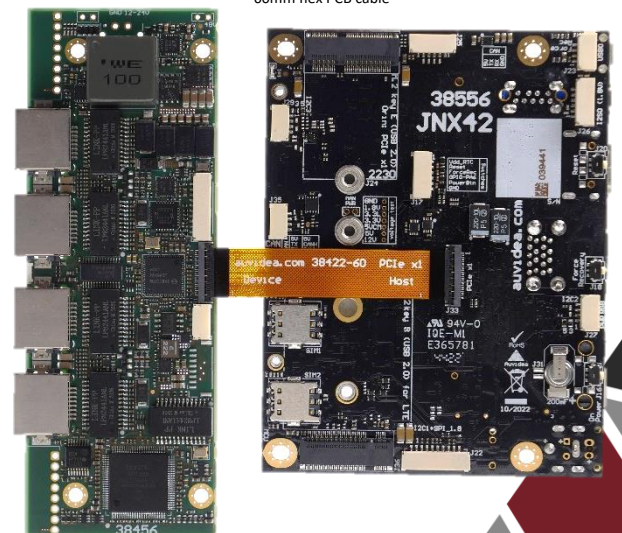
Build to order embedded systems

On request the Auvidea carrier boards can be integrated to build to order embedded systems. Normally these a passively cooled systems with standard or Auvidea custom extrusions.

The extrusion shown above is very compact and offers excellent thermal characteristics. For ease of mouting the carrier board can just slide into this enclosure.

Optionally embedded systems can be populated with IP67 rated connectors.