JACKSON Carrier board for NVIDIA Jetson Orin NX / Orin Nano

Jackson carrier board

Top view with Jetson socket and I/O

FEATURES

Core System Features

Carrier board and integrated assembly for NVIDIA Jetson Orin Nano / Orin NX GPU modules

2x Gb Ethernet with RJ-45

3x USB 3.2 / 1x USB 2.0 ports

1x RS-232/485, 1x RS-232 serial port via RJ-12 and pin header

1x HDMI 2.0a/b with audio support

Camera adapter module connector supports a variety of cameras with 8 CSI lanes available

16x GPIO 3.3V/5V

1x CAN 2.0 port

Expansion Options

Minicard socket with PCIe, USB, and SIM socket

M.2 E-key 2230 socket

M.2 M-Key 2280/2242 socket

Daughterboard expansion connector with PCIe and USB3 links

Mechanical / Environmental

Compact size 4.33 x 3.35" / 110 x 85mm

7-20VDC input voltage (Orin NX)
5VDC input voltage (Orin Nano) auto-switching

-25 to +80 deg. C Operation (matching Jetson modules)

Bottom view with expansion sockets

Jackson with Orin NX installed

Full system assembly with Jetson and fan sink

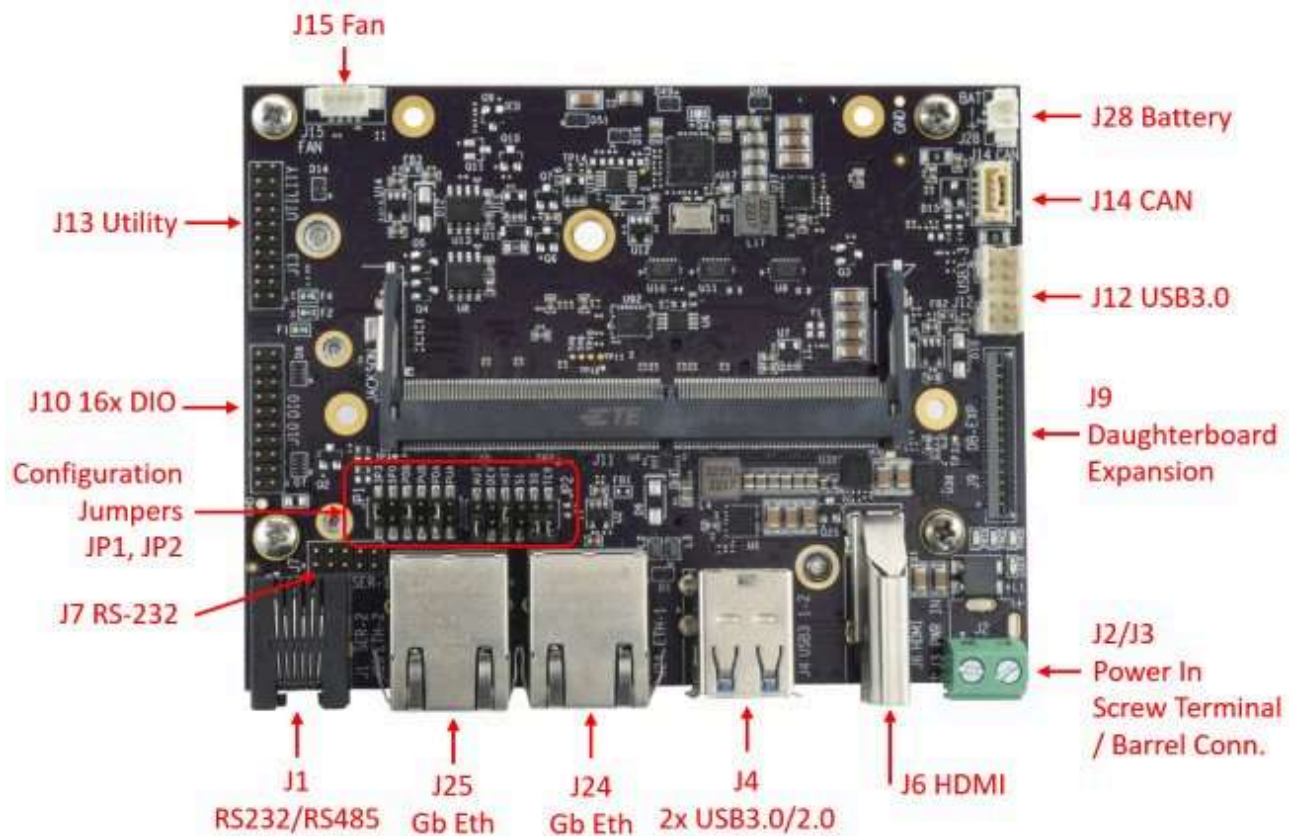

Front view showing I/O connectors and pushbuttons

Jackson provides a compact, economical, and I/O-rich solution for NVIDIA Jetson Orin Nano / Orin NX GPU modules. Jackson brings out all I/O from the modules to I/O connectors or expansion sockets. Two quad-lane CSI camera connectors enable high-performance image processing applications utilizing the enhanced capabilities of the Orin series.

An I/O expansion connector provides a convenient way to customize Orin Nano / NX applications by designing low-cost I/O daughterboards that mount directly underneath the Jackson carrier board. The connector provides PCIe, USB3, I2C, and power via a flex circuit cable. Daughterboards can be designed to provide extra Ethernet and USB ports, extra M.2 and minicard sockets, and other I/O.
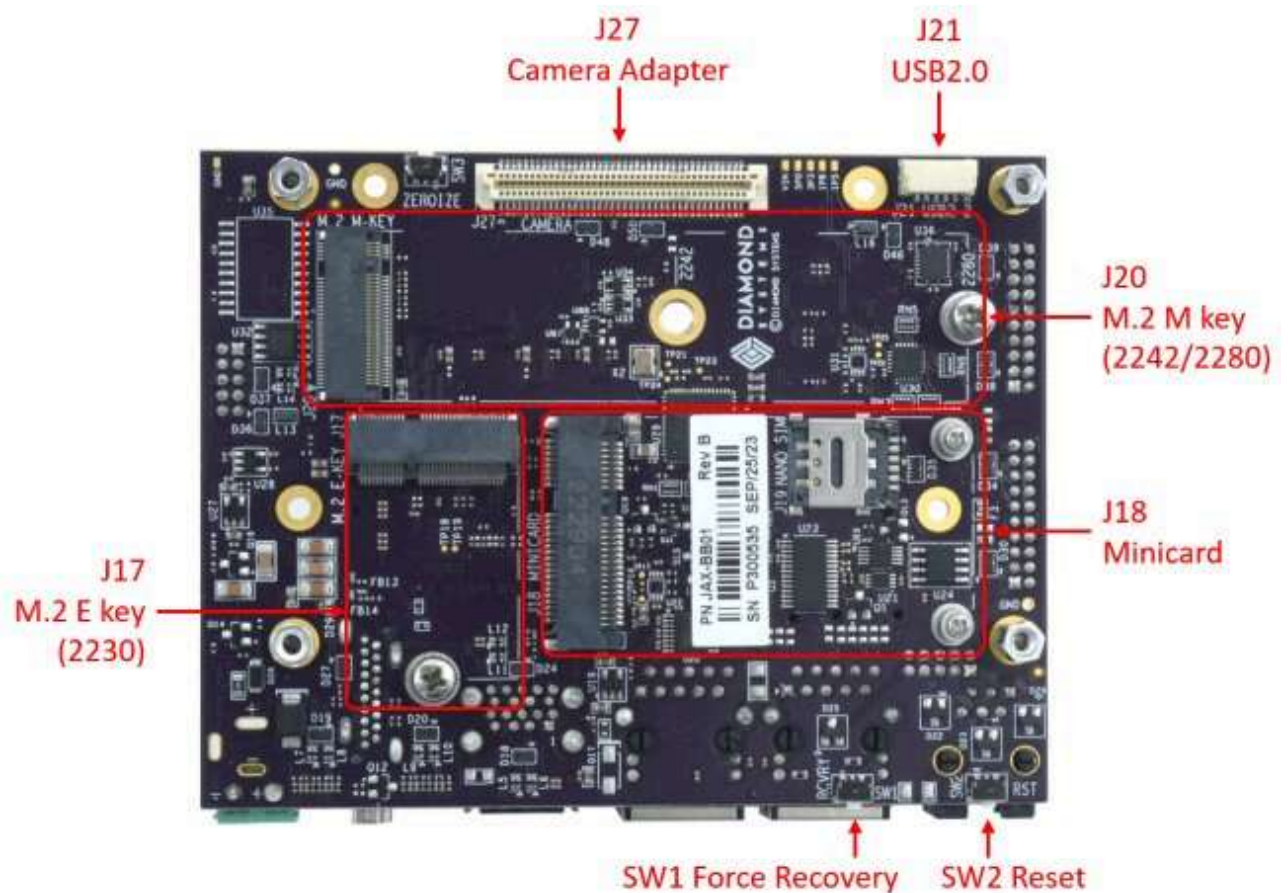
Jackson is available both as a carrier board and as a complete integrated solution with Jetson module and fan sink installed and Linux OS loaded. See the ordering information tab for part numbers and configurations.

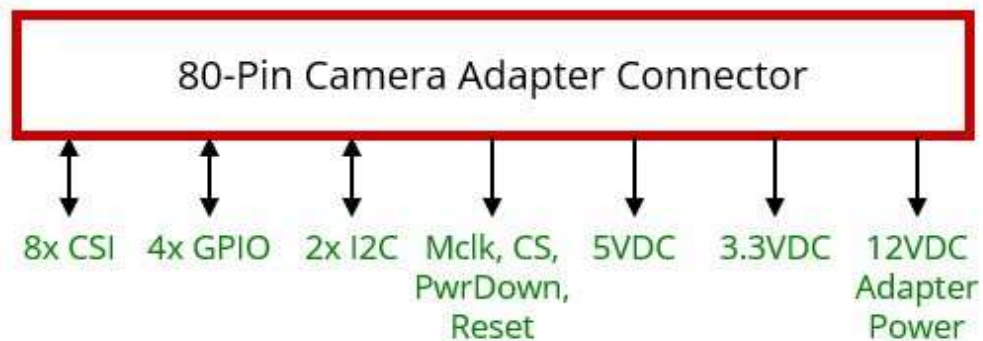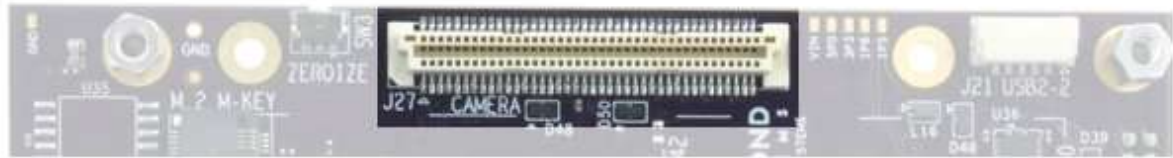The illustrations below show the wealth of I/O and expansion sockets available on Jackson.

Top side features

Bottom side features

◆ Camera Adapter Socket

Jackson contains a unique camera adapter connector that makes it possible to interface any camera, including standard, custom, CSI, and GMSL cameras, to the board by using a simple, low-cost adapter board. Custom cameras can easily be connected to Jackson in this way without the expense of a custom carrier board or the inconvenience and fragility of free-hanging adapter boards.

Bottom side with dual 4-lane CSI adapter board installed

◆ Expansion Capabilities

Jackson contains multiple sockets for I/O and mass storage:

- The M.2 M key socket with NVMe PCIe x4 connectivity is generally used for mass storage, since the Orin Nano and Orin NX modules lack integrated eMMC mass storage. The socket supports both 2242 and 2280 size modules, and all mounting hardware is included.
- A full-size minicard socket provides both PCIe and USB interfaces to support a wide range of I/O modules including analog, digital, serial, Ethernet, WiFi, and Bluetooth.
- An M.2 E key 2230 socket supports the installation of modem, WiFi, and Bluetooth modules for mobile applications.

Daughterboard Expansion

A unique flex cable connector enables additional I/O expansion with off the shelf or custom-developed daughterboards. The connector offers USB 3.0 and PCIe connectivity to the Jetson module, as well as power. Since an I/O daughterboard is much quicker and easier to design than a full-custom carrier board, the effort required to add custom I/O to your Orin Nano / NX project is simplified. For example, additional USB 3.0 ports, additional Ethernet ports, an Ethernet switch, or even a PoE PD circuit can all easily be implemented on a daughterboard.

Daughterboards typically are the same size as the main board and mount directly underneath the main board for convenient packaging. They can also be mounted in tandem for a thinner but wider form factor.
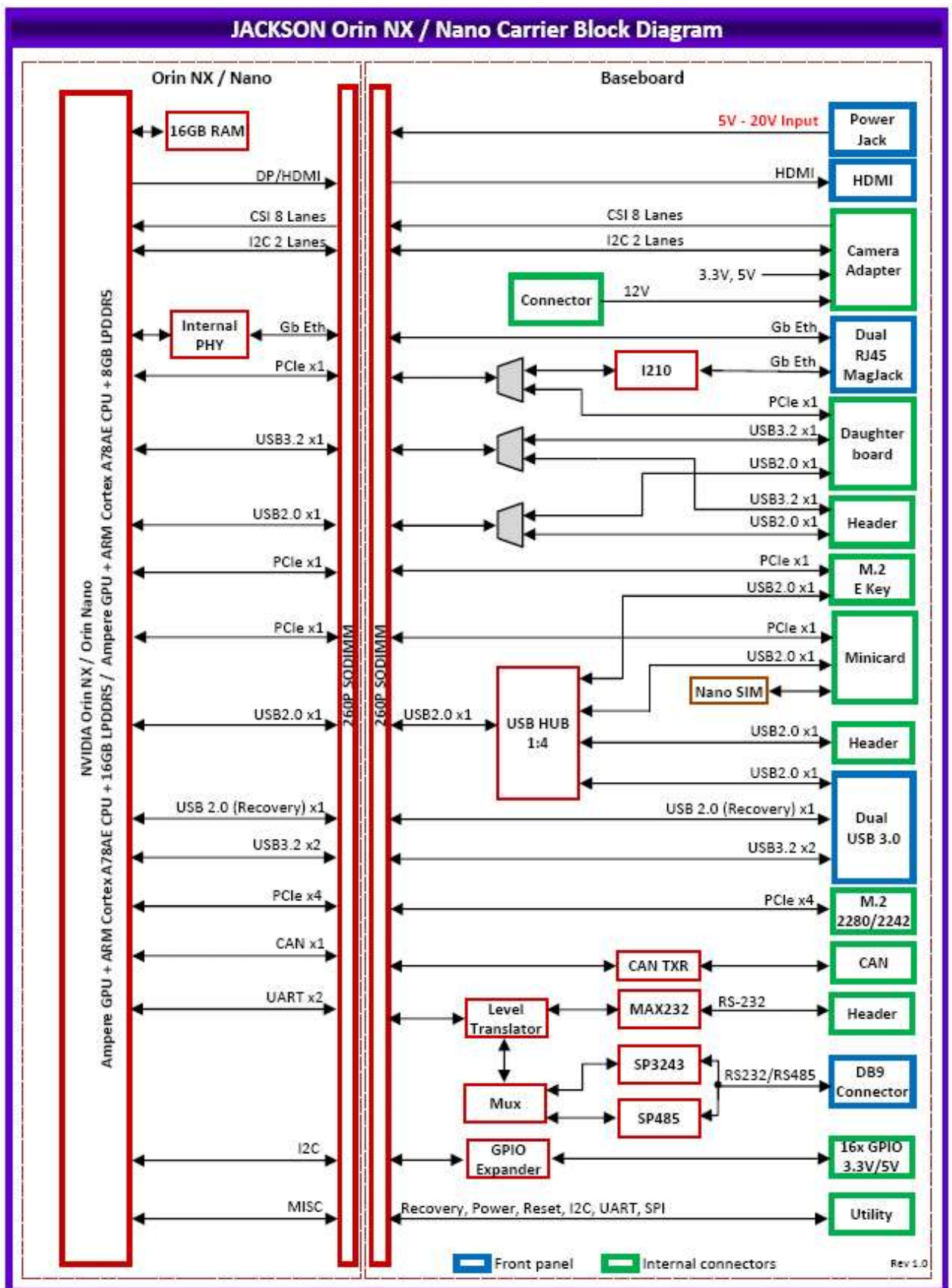

Jackson with daughterboard

◆ **Cable Kit**

The Jackson cable kit (part number CK-JAX-01) includes all cables needed for I/O on Jackson other than industry-standard cables (Ethernet, USB, HDMI).

CK-JAX-01 includes the following cables:

No.	Qty	Cable	Description	Drawing
1	1	4713001	3.3V RTC backup battery cable, Molex 2-pin connector	-
2	1	6980104	Cable, RJ-12 to DB9M, 12" length	**Show**
3	1	6980504	USB cable, JST GHV-05V-S latching to USB type A panel mount, 12"	**Show**
4	1	6980529	Cable, Molex 51021-0200 1.25mm Pitch, 150mm L, External Battery	-
5	1	6980603	Cable, FCI 2x5 2mm latching to USB 3.0 type A panel mount	**Show**
6	1	6981075	Dual serial port DB9M	**Show**
7	1	6981182	CANbus 2.0 cable, JST 1x4 to DB9M	**Show**
8	2	C-20MM-18	2x10 2mm IDC ribbon, 18"	-

JACKSON Orin NX / Nano Carrier Block Diagram

Rev 1.0

Ordering Information

Jackson is available both as a carrier board and as a complete assembly with the Jetson module and fan sink installed. The Jetson module is preprogrammed with a full Linux OS based on the latest Nvidia JetPack release.

Models and Accessories

Jackson

JAX-BB01	Jackson carrier board for NVIDIA Jetson Orin Nano & Orin NX	Available
JAX-BB02	Jackson carrier board for NVIDIA Jetson Orin Nano & Orin NX	Available / MOQ 100
JAX-ASY-ONA4	Jackson BB01 carrier board with Orin Nano 4GB installed and programmed, with fan sink	Available
JAX-ASY-ONA8	Jackson carrier board with Orin Nano 8GB installed and programmed, with fan sink	Available
JAX-ASY-ONA4-2	Jackson BB02 carrier board with Orin Nano 4GB installed and programmed, with fan sink	Available
JAX-ASY-ONX8	Jackson carrier board with Orin NX 8GB installed and programmed, with fan sink	Available
JAX-ASY-ONX16	Jackson carrier board with Orin NX 16GB installed and programmed, with fan sink	Available

Please login or signup for an online quote request.

Cables and accessories

Available Models:

6882650	Heat sink for Jackson / Jackson-ER, 90 x 50.3 x 21.5mm
6882651	Heat sink with fan for Jackson / Jackson-ER, 90 x 50.3 x 25.6mm, 5V
CK-JAX-01	CK-JAX-01 cable kit
4713001	3.3V RTC backup battery cable, Molex 2-pin connector
6980104	Cable, RJ-12 to DB9M, 12" length
6980504	USB cable, JST GHV-05V-S latching to USB type A panel mount, 12"
6980529	Cable, Molex 51021-0200 1.25mm Pitch, 150mm L, External Battery
6980603	Cable, FCI 2x5 2mm latching to USB 3.0 type A panel mount
6981075	Cable, Dual Serial, 2mm 2x5 conn to 2x DB9M Pnl Mt, 12"L
6981182	CANbus 2.0 cable, JST 1x4 to DB9M
C-20MM-18	2x10 2mm IDC ribbon, 18"

Please login or signup for an online quote request.

www.diamondsystems.com | Sunnyvale, California USA | +1-650-810-2500 | sales@diamondsystems.com