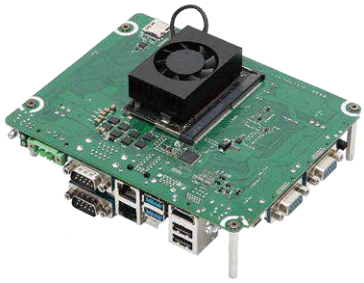
NVIDIA Jetson Orin NX/Nano
Developer Kit

ASRock Industrial

Preliminary



KEY FEATURES

- NVIDIA Jetson Orin NX 16GB SOM Super Mode support, up to 157 SPARSE (78 DENSE) INT8 TOPS
- NVIDIA Jetson Orin NX 8GB SOM Super Mode support, up to 117 SPARSE (58 DENSE) INT8 TOPS
- NVIDIA Jetson Orin Nano 8GB SOM Super Mode support, up to 67 SPARSE (33 DENSE) INT8 TOPS
- NVIDIA Jetson Orin Nano 4GB SOM Super Mode support, up to 34 SPARSE (17 DENSE) INT8 TOPS
- POE SKU integrates 2x POE ports. Each port supports IEEE 802.3AF
- Wide Range Operating Temperature
- 12-36V Phoenix type DC IN support
- Carrier board reserved 2pcs Four Lane MIPI-CSI2 connectors (Option for DSC-NV002-WT R1.02)**

SPECIFICATIONS

Processor System

System on Module	- NVIDIA Jetson Orin NX SOM 16GB support - NVIDIA Jetson Orin NX SOM 8GB support - NVIDIA Jetson Orin Nano SOM 8GB support - NVIDIA Jetson Orin Nano SOM 4GB support Carrier Board DSC-NV002-WT R1.02 supports Jetson Nano 8G/4G SOM Super Mode,Carrier Board DSC-NV002-WT R1.03 supports Jetson Nano 8G/4G SOM Super Mode and Jetson NX 16G/8G SOM Super Mode.
Video	1 x HDMI 2.0 (Orin NX)/ 1.4 (Orin Nano)
Memory	16GB 128-bit LPDDR5 (Jetson Orin NX 16GB) 8GB 128-bit LPDDR5 (Jetson Orin NX 8GB) 8GB 128-bit LPDDR5 (Jetson Orin Nano 8GB) 4GB 64-bit LPDDR5 (Jetson Orin Nano 4GB)
TPM	TPM2.0

I/O Interface

Ethernet	2x 1G LAN (LAN1 from SOM, LAN2 from Intel I210AT)
PoE (Option)	2x Intel I210AT ports, each port supports IEEE 802.3AF PoE
Serial Port	1 x RS-232, 1 x RS-232/422/485 (Pin9 default is N/A, +5V or +12V/1A software programmable)
USB	2 x USB 3.2 Gen 2x1 (one with Locking) 2 x USB 2.0, 1 x Micro USB 2.0 (Device mode only, for OS Flash)
Proprietary IO (DPR connector is proprietary design of DIO, Power/GND, Remote Power Button signals and power/GND pins. ISC connector is proprietary design of I2C, SPI, CANBUS Interface and Power/GND Pins.)	DPR connector: 1 x DB15 for 4*DI, 4*DO, GND, Power Pin (Default is N/A, +5V/1A software programmable), PowerOn, LED+,LED-, GND, Reset ISC connector: 1 x DB15 for Power Pin(Default is N/A, +3V/1A software programmable), 5 x GND, 1 x I2C, 1 x SPI, 1 x CANBUS

Expansion

SIM	1 x Nano SIM Card slot
RF& Antenna (Option)	up to 4 x 5G/4G LTE antenna + 2 x Wi-Fi antenna
M.2 Socket	1 x M.2 (Key B, 3042/3052/2280) -For PCIe Gen3 x1 / USB3.2 Gen2x1 5G module (Option) -For PCIe Gen3 x1 / USB3.2 Gen2x1 4G LTE module (Option) -For PCIe Gen3 x1 M.2 B Key 2280 SSD module (Option) 1 x M.2 (Key E, 2230) for PCIe Gen3 x1 Wi-Fi and USB2.0 Bluetooth module (Option)

Power Requirements

DC Input	1st DC IN source: 12V~36V DC input, 80V Surge Protection. OVP, UVP, OCP, Reverse Protection, Phoenix type connector
AC to DC Adaptor (Option)	120W Adapter, AC input 100-240Vac, 1.8A 50~60Hz, DC output 19V, 6.32A

Storage Device

M.2 Socket	For Jetson Nano 8G/4G SOM Super Mode and Jetson NX 16G/8G SOM: 1 x M.2 (Key M, 2280) for wide temperature PCIe Gen3 x 4 NVMe SSD module (System Operating temperature -10° C~45° C) 1 x M.2 (Key M, 2280)for wide temperature PCIe Gen4 x 4 NVMe SSD module (System Operating temperature -10° C~45° C) PCIe Gen4 x 4 SSD only supported by Orin NX SOM Default is PCIe Gen3 x4 256GB WT SSD For Jetson Jetson NX 16G/8G SOM Super Mode: TBD
Micro SD Card slot	1 x Micro SD Card Slot (UHS-I/SDR-50)

Mechanical

Dimensions	140(W) x 70(H) x 175(D) mm
Indicator	1 x Storage LED 1 x DC-IN LED
Function	Power on button with LED, OS Flash Button, Reset Tact Switch Enable/Disable Auto power on Switch
Net Weight	1kg

Environmental

Operating Temperature	For Jetson Nano 8G/4G SOM Super Mode and Jetson NX 16G/8G SOM: -10~45° C (14~140°F) for Basic sku, PoE sku, or 5G sku w/ 4G LTE Module when installed with WT SSD Gen3 x 4 -10~45° C (14~131°F) for Basic sku, PoE sku, or 5G sku w/ 4G LTE Module when installed with WT SSD Gen4 x 4 -10~45° C (14~131°F) for 5G sku w/ 5G Module when installed with WT SSD Gen4 x 4 or WT SSD Gen3 x 4 (w/ air flow 0.5~0.8m/s) For Jetson NX 16G/8G SOM Super Mode: TBD
Storage Temperature	-40°C~85°C (-40°F~185°F)
Humidity	~90% @ 45°C (non-condensing)
EMC	CE, FCC Class A (EN61000-6-4/-2)

Add-on Feature / OS Support

Carrier board feature	Carrier board reserved 2pcs Four Lane MIPI-CSI2 connectors (Option for DSC-NV002-WT R1.02)*
OS Support	NVIDIA JetPack 5.1.2 for Jetson Nano 8GB/4GB SOM and NX 16GB/8GB SOM ready NVIDIA JetPack 6.2 for Jetson Nano 8GB/4GB SOM Super Mode coming soon NVIDIA JetPack 6.2 for Jetson NX16GB/8GB SOM Super Mode coming soon with DSC-NV002-WT R1.03

*MIPI-CSI2 camera need to be turned off before system going to sleep mode.
It is current NVIDIA JetPack limitation.

Part Number	Product Name	Specification
90PCA1E0-04320010	ORIN NX 16GB DEV KIT/AI	ONX16G,256GB
90PCA1E0-14320010	ORIN NX 8GB DEV KIT/AI	ONX8G,256GB
90PCA1E0-24320010	ORIN NANO 8GB DEV KIT/AI	ONANO8G,256GB
90PCA1E0-34320010	ORIN NANO 4GB DEV KIT/AI	ONANO4G,256GB

Packing List

Item	Description	Qty
1	NV Jetson Orin NX 16GB, Orin NX 8GB, Orin Nano 8GB, or Orin Nano 4GB SOM	1 pcs
2	DSC-NV002-WT R1.02	1 pcs
3	SOM Cooler	1 pcs
4	Stand	4 pcs
5	Screw for Stand	4 pcs
6	DC in Phoenix Type Mating Connector	1 pcs
7	M.2 Screw	3 pcs
8	Screw for Locking SOM 2 pcs	2 pcs
9	M.2 Key M PCIe Gen3x4 SSD WT 256GB	1 pcs
10	120W Adaptor	1 pcs
11	Optional Power Cord	1 pcs
12	Optional AX210 Wifi Module	1 pcs
13	Optional Wifi Cable	2 pcs
14	Optional Wifi Antenna	2 pcs
15	Optional 4G LTE M.2 Key B Module	1 pcs
16	Optional 4G LTE Cable	2 pcs
17	Optional 4G LTE Antenna	2 pcs
18	Optional 5G M.2 Key B Module	1 pcs
19	Optional 5G Cable	4 pcs
20	Optional 5G Antenna	4 pcs