ROScube Pico NPN/ ROScube Pico Developer Kit

NVIDIA® Jetson Nano™ or Xavier™ NX-based platform for rapid development of ROS and AI applications



Features

- Powered by an NVIDIA® Jetson Nano™ or Xavier™ NX system on-module (SOM)
- Low power consumption (15W) and excellent per-watt performance
- Compact, SODIMM-based design
- Comprehensive I/O for broad compatibility
- Affordable solution for rapid development and deployment
- Reliable, lockable USB connectors

Ordering Information

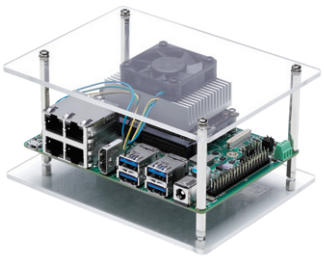
- NPN-1
  ROScube Pico with NVIDIA Nano SODIMM module
- NPN-1B
  ROScube Pico with NVIDIA Nano SODIMM module, IP40 BOX version
- NPN-2
  ROScube Pico with NVIDIA NX SODIMM module
- NPN-2B
  ROScube Pico with NVIDIA NX SODIMM module, IP40 BOX version

Optional Accessories

- M.2 M Key 2242 NVMe SSD
  256GB, Transcend TS256GMTE452T (P/N: 29-46N00-6100)
- Wireless module
  Intel® Wireless-AC 9260 M.2 2230, Dual-Band 2x2 Wi-Fi + Bluetooth+ 5 kit (P/N: 91-95266-0010)
  * WIFI backport driver is on the desktop.
- 90W, Adapter, 19V/4.74A, DC Jack (P/N:31-62137-0000)
  (board version comes with 60W adapter by default)

Software Support

- Ubuntu 18.04 L4T
- Neuron SDK
- NVIDIA Jetson SDK



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Specifications

Model Name	Developer Kit (Nano SOM)	ROScube Pico Nano	Developer Kit (Xavier NX SOM)	ROScube Pico NX
System-on-module (SOM)				
NVIDIA Module	NVIDIA Jetson Nano Module		NVIDIA Jetson Xavier NX Module	
CPU	Quad-core ARM Cortex-A57 MPCore processor		6-core NVIDIA Carmel ARM v8.2 64-bit CPU 6MB L2 + 4MB L3	
CPU Max Frequency	1.43GHz		Power Modes (S/W controllable by user): 2-core @ 1.5GHz, 10W 4-core @ 1.2GHz, 10W 2-core @ 1.9GHz, 15W 4-core @ 1.4GHz, 15W 6 core @ 1.4GHz, 15W	
GPU	NVIDIA Maxwell architecture with 128 NVIDIA CUDA® cores		384-core NVIDIA Volta GPU with 48 Tensor Cores	
GPU Max Frequency	921MHz		800MHz @10W 1100MHz @ 15W	
Memory	4GB 64-bit LPDDR4 @ 1600MHz 25.6GB/s		8GB 128 bit LPDDR4x @ 1600MHz 51.2GB/s	
Storage	16GB eMMC 5.1 on NV module			
AI performance	N/A		14 TOPS @10W 21 TOPS @15W	
Front Panel I/O Interface				
Display	1x HDMI 2.0			
Ethernet	4x Gigabit Ethernet ports			
USB 3.1 Gen1	4x USB 3.1 Gen1 Type-A ports (2x with lockable connectors)			
Micro-USB	1x Micro-USB port for OTG/debugging and recovery			
Internal I/O Interfaces				
MRAA 40-pin header	2x I^2C, 7x GPIO, 1x SPI, 1x UART, 10x PWM (board only)			
micro SD	1x micro SD slot (Board level with 1x 32GB micro SD card as default)			
M.2 slot	1x M.2 Key E for Wi-Fi module 1x M.2 2242 Key M for NVMe SSD			
CANbus	1x 3-pin header (only on NPN-2 SKU and board level)			
FAN	1x 4-pin-wafer for FAN control (FAN control only on NPN-2 SKU)			
LEDs (board only)	Power (green) Standby (blue) SD Card (green) NVMe Module (amber)			
Power management pin	1x power button, 1x system reset, 1x force recovery, 1x power-on LED (for extending the function to robots)			
RTC	CR2032 3V Li VARTA battery			
Side Panel I/O Interfaces				
DB-37 connector	2x UART, 2x I^2C, 1x SPI, 1x CANbus, 5x GPIO, 1x extended power on/off, 1x extended SYS reset, 1x extended force recovery			
Audio IN/OUT	1x 3.5mm stereo line-out jack			
Sensor				
IMU	1x BMI160 (3-axis gyroscope, 3-axis accelerometer)			
Power Requirements				
Power Buttons	1x power on/off button, 1x reset button			
DC input	8-20 VDC (+/- 10%)			
AC/DC Power adapter	90W, Adapter, 19V/4.74A, DC Jack (optional, see ordering information)			

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Specifications

Mechanical				
Dimensions (WxDxH)	Board: 123.5 x 90 mm (4.86 x 3.54 in.)	System: 140 x 110 x 63.3 mm (5.5 x 4.33 x 2.49 in.)	Board: 123.5 x 90 mm (4.86 x 3.54 in.)	System: 140 x 110 x 63.3 mm (5.5 x 4.33 x 2.49 in.)
Weight	319 g	1035 g	339 g	1035 g
Mounting	Wall mount kit (with BOX version only)			
Environmental				
Operating Temperature (with 0.6m/s airflow)	-20°C to 45°C	-20°C to 50°C	-20°C to 60°C	-20°C to 50°C
Operating Humidity	Approx. 95% @40°C (non-condensing)			
Storage Temperature	-40 to 85°C (-40°F to 185°F)			
EMI	CE & FCC Class A with validated AC/DC adapter (EN 55032/35, EN 61000-6-4/-2)			
EMS	IEC 61000-4-2 (ESD, contact: ±8kV, air: ±15kV) IEC 61000-4-3 (RS, 10V/m from 80-1000MHz, 3V/m from 1400-2000MHz, 1V/m from 2000-2700MHz, 1kHZ sine wave, 80% AM) IEC 61000-4-4 (EFT, ±2kV at 5KHz on power port, ±1kV at 5KHz on signal port) IEC 61000-4-5 (Surge, ±2kV line to earth CM on power port, ±1kV line to earth CM on signal port) IEC 61000-4-6 (CS, 10Vrms with 1kHz sine wave, 80% AM from 0.15MHz-80MHz) IEC 61000-4-8 (power-frequency magnetic fields) IEC 61000-4-11 (voltage DIPs & voltage interruptions)			
Vibration	IEC60068-2-64: 1Grms, 10-500Hz, 1 hour/axis, operational			
Shock	IEC-60068-2-27 Operating 50G, half sine 11ms duration			
Safety	62368 LVD			
Software				
Environment	Ubuntu 18.04 L4T			
Middleware	ROS/ROS 2			
SDK	ADLINK Neuron SDK			

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