

# ROScube-X series

*Embedded Robotic Controller Powered by NVIDIA® Jetson AGX Xavier™ Module*

## Features

- Powerful AI computing for intelligent robotics development
- Excellent performance per watt with power consumption as low as 30 W
- Ruggedized, secure connectivity with locking USB ports
- Comprehensive I/O for connecting a wide range of devices
- Time synchronization with GMSL2 camera



## Introduction

ROScube-X, a ROS 2 enabled robotic controller powered by the NVIDIA® Jetson AGX Xavier module, features an integrated NVIDIA Volta GPU and dual deep learning accelerators and a wide variety of interfaces including GMSL2 camera connectors for advanced robotic system integration. ROScube-X supports the full complement of resources developed with the NVIDIA JetPack SDK and ADLINK's Neuron SDK, and is specifically suited for robotic applications demanding high-AI computing with minimal power consumption.

## Software Support

- **Ubuntu 18.04 L4T**
- **Neuron SDK, Neuron IDE, Neuron Library**
- **NVIDIA Jetson SDK**



## Ordering Information

- **RQX-58G / RQX-58G-E**  
Embedded Robotic Controller Powered by NVIDIA® Jetson AGX Xavier™ with FAKRA GMSL2 / w/ expansion box
- **RQX-580 / RQX-580-E**  
Embedded Robotic Controller Powered by NVIDIA® Jetson AGX Xavier™ / w/ expansion box

## Optional Accessories

- **Wireless Module**  
Intel® Wireless-AC 9260 M.2 2230, Dual-Band 2x2 Wi-Fi + Bluetooth+ 5 kit (P/N: 91-95266-0010)
- **FAKRA cable for GMSL camera**
- **AC/DC Power Adapter**  
220W AC/DC Power Adapter (P/N: 31-62149-0000)  
160W AC/DC Power Adapter (P/N: 31-62120-0010)

## Specifications

Model Name	RQX-58G RQX-58G-E	RQX-580 RQX-580-E
<b>System Core</b>		
Processor	NVIDIA® Jetson AGX Xavier™	
CPU	Carmel ARMv8.2 2.26GHz	
GPU	512-core 1.37GHz	
Memory	32GB on module	
eMMC	32GB on module	
Display	1x HDMI 2.0a	
<b>Front Panel I/O Interface</b>		
Ethernet	2x GbE	
USB 3.0	4x USB Type A 2x USB Type A with lockable connector	
Serial Port	COM1: RS-232/485; COM2: RS-232	
OTG	1x OTG port for change environment image	
<b>Side Panel I/O Interface</b>		
DB-50 connector	UART, SPI, CANbus x1, I2C, PWM, 20-bit GPIO	
Audio IN/OUT	1x audio input/output	
<b>Internal I/O connectors</b>		
M.2 Extension	1x Socket 2, Key B+M 2280 for Storage (Need NVMe SSD) 1x Socket 1, Key A+E 1630/2230 for Wifi	
Mini PCIe	1x Mini PCIe socket for LTE, GPS	
USIM	1x USIM socket	
RTC	3V 550mAh	
<b>Sensor</b>		
9-axis sensor	Time sync with GMSL2 camera	
<b>External Storage</b>		
SD Card	1x MicroSD card slot	
<b>LED indicator</b>		
User Defined	5x user defined LEDs Green: U1,U2,U3 Amber: U5 Yellow: U4	
Power LED	1x Power ON LED	
<b>Camera Interfaces</b>		
FAKRA connectors	2x mini FAKRA connectors, Quad port (For GMSL2 camera, driver support AR0233-GMSL2 and Sony ISX021 cameras)	N/A
<b>Expansion BOX</b>		
	1x PCIe Gen3 x8 Slot, support up to 75W 1x PCIe Gen3 x4 Slot, support up to 25W	
<b>Power Requirements</b>		
DC Power Input	9-36V (±5% tolerance, reverse polarity protection)	
AC/DC Power Adapter	160W/220W AC/DC power adapter with Molex lockable connector to Phoenix terminal block connector (see optional accessory)	
Power Switch	1x power button	
Recovery and Reset	1x Recovery 1x Hardware Reset button	
<b>Mechanical</b>		
Dimensions	190(W) x 210(D) x 80(H) mm (7.48 x 8.27 x 3.149 inch) With Expansion: 322(W) x 210(D) x 80(H) mm (12.68 x 8.27 x 3.149 inch)	
Mounting	Wall mount kit	

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Model Name	RQX-58G RQX-58G-E	RQX-580 RQX-580-E
<b>Environmental</b>		
Operating Temperature	0 to 50°C at full CPU frequency with 0.6m/s airflow -20 to 70°C (-4°F to 158°F with 1.4GHz CPU) with 0.6m/s airflow	
Operating Humidity	Approx. 95% @40°C (non-condensing)	
Storage Temperature	-40~85°C	
Vibration	IEC 60068-2-64: Operating 3Grms, 5-500 Hz, 3 axes	
Shock	MIL-STD-202G Method 213B, Table 213-I condition A Operating: 30G, half sine 11ms duration. (w/o expansion)	
EMI	CE & FCC class A (EN61000-6-4/-6-2)	
EMS	<b>IEC 61000-4-2</b> (ESD, contact: ±4kV, air: ±8kV w/ expansion) <b>IEC 61000-4-3</b> (RS, 10V/m from 80-1000MHz, 3V/m from 1400-2000MHz, 1V/m from 2000-2700MHz, 1kHz sine wave, 80% AM) <b>IEC 61000-4-4</b> (EFT, ±2kV at 5KHz on power port, ±1kV at 5KHz on signal port) <b>IEC 61000-4-5</b> (Surge, ±2kV line to earth CM on power port, ±1kV line to earth CM on signal port) <b>IEC 61000-4-6</b> (CS, 10Vrms with 1kHz sine wave, 80% AM from 0.15MHz-80MHz) <b>IEC 61000-4-8</b> (power-frequency magnetic fields) <b>IEC 61000-4-11</b> (voltage DIPs & voltage interruptions)	
Safety	LVD	
<b>Software</b>		
SDK	ADLINK Neuron SDK, NVIDIA Jetson SDK	
Environment	Ubuntu 18.04 L4T	
Middleware	ROS/ROS 2, Neuron Library DDS with shared memory DDS with extra QoS	