

## SD-601-M12X

NVIDIA® Jetson Orin NX Fanless  
Edge AI Computer

- NVIDIA® Jetson Orin™ NX SoM with 1024 CUDA Cores
- 4 x GMSL-2 Cameras Support
- 2 x Ethernet with M12 Connectors
- 1 x CAN FD for Vehicle Connection
- 9-60VDC Input with Built-in Smart Power Management
- -25°C ~ 70°C Operating with Fanless Design
- Optional Backup Battery for Emergency

## Edge AI Application



## CAN FD

Enables In-Vehicle Networking



## Wide Range Power Input

9~60V DC Input with  
Smart Power Management



## 2.5 GbE + GbE

M12 Connector for Robust Connection  
Connect to PoE Switch or LiDAR



## GMSL-2

Connect to GMSL-2 cameras for  
real-time video capture



## Dual USB 3.2

High Speed Connection for  
Cameras or Sensors

## Specifications

## System

## Module

- NVIDIA® Jetson Orin™ NX 16GB  
(1024 CUDA cores + 8-core ARM Cortex-A78AE CPU + 16 GB LPDDR5)
- NVIDIA® Jetson Orin™ NX 8GB  
(1024 CUDA cores + 6-core ARM Cortex-A78AE CPU + 8 GB LPDDR5)

## Network

- Intel® 2.5GbE, SoM Built-in GbE

## Security

- Platform Security Controller (PSC), Security Engine (SE)

## Interface

## Ethernet

- 2 x M12 X-coded connectors for 1 x 2.5GbE & 1 x GbE

## USB

- 2 x USB 3.2 Type-A \*Two ports share 10Gbps bandwidth

## Video

- 1 x HDMI Type-A output supports 4K resolution

## Audio

- 1 x HD Audio from the HDMI

## Serial Port

- 1 x DB-9 for RS-232/422/485

## Camera Port

- 4 x FAKRA-Z connectors for GMSL-2 cameras

## CAN Bus

- 1 x DB-9 for CAN FD

## DIO

- 1 x DB-9 for 4 x DI / 4 x DO

## Mgmt. Port

- 1 x USB Type-C for system recovery (Device only)

## SIM Card

- 1 x Nano SIM card slot

## Antenna

- 5 x Pre-cut holes for external SMA antenna

## Internal Expansion

## M.2 Slot

- 1 x M.2 3042/52 Key B slot (USB3.0) with a Nano SIM Card Slot
- 1 x M.2 2230 Key E slot

## mPCIe Slot

- 1 x mPCIe Full size slot (USB.2.0 supported)

## Storage

## Type

- 1 x M.2 2280 Key M slot supports NVMe SSD (Pre-installed system BSP)

## Power

## Supply Voltage

- 1 x M12 K-coded for DC-IN 9 ~ 60V
- Supports Smart Power Management, OCP and OVP

## RTC Battery

- High-capacity coin cell battery for RTC

## UPS (Option)

- Backup battery for system power backup

## Software

## Operating System / BSP

- NVIDIA® JetPack including Jetson Linux, NVIDIA® development tools

## Environmental

## Operating Temp.

- -25°C ~ 70°C (-13°F ~ 158°F), ambient w/ 0.6m/s airflow

\*Operating temp. varies by accessories installed.

## Storage Temp.

- -40°C ~ 80°C (-40°F ~ 176°F)

## Relative Humidity

- 10% RH – 90% RH (non-condensing)

## Vibration

- Random - IEC60068-2-64, random, 2.5G@5~500Hz, 1hr/axis
- MIL-STD-810G - Method 514.6, Procedure I, Category 4

## Shock

- MIL-STD-810G, Method 516.6, Procedure I,  
Trucks and semi-trailers=15G (11ms) with SSD

## Certification / Standard

• CE, FCC Part-15 Class A, E-mark, EN50155, EN45545-2 (R25)

## Mechanical

### Construction

• Aluminum alloy

### Thermal Design

• Fanless passive cooling design

### Mounting

• DIN-rail, Wall-mounting

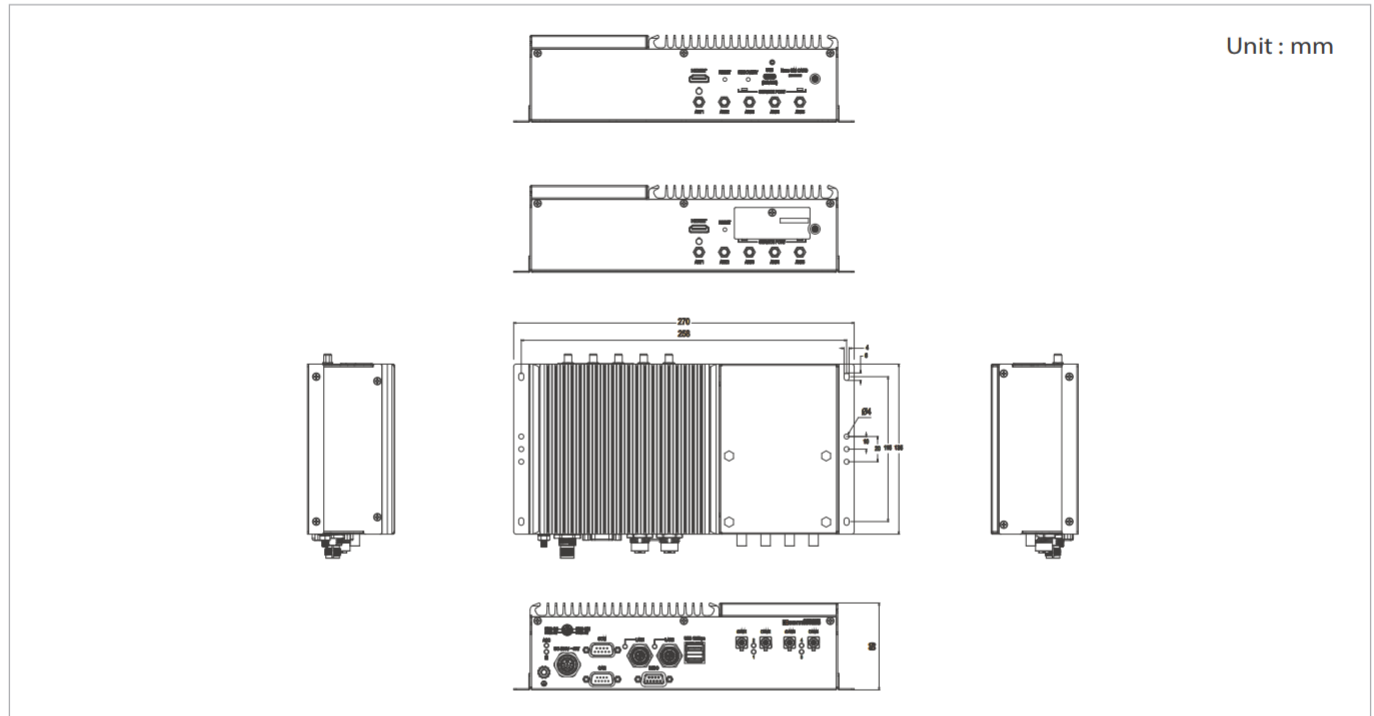
### Weight

• 1870 g (TBC)

### Dimensions

• 270.2 mm (L) x 270.2 mm (W) x 69 mm (H)

## Dimensions



## Ordering Information

Model Number	SD-601-M12X-00-ONX16	NVIDIA® Jetson Orin™ NX 16GB / VDB-100 / 4 x GMSL-2 / Model M12
	SD-601-M12X-00-ONX8	NVIDIA® Jetson Orin™ NX 8GB / VDB-100 / 4 x GMSL-2 / Model M12
	SD-601-M12X-01-ONX16*	NVIDIA® Jetson Orin™ NX 16GB / VDB-101 / 4 x GMSL-2 / Model M12
	SD-601-M12X-01-ONX8*	NVIDIA® Jetson Orin™ NX 8GB / VDB-101 / 4 x GMSL-2 / Model M12
Description	NVIDIA® Jetson Orin™ NX w/ 1 x 2.5GbE / 2 x LAN / 1 x HDMI / 1 x CAN bus / 4 x GMSL-2 / DC 9-60V / Edge AI Computer	
State of Origin	Made in China	

\*Jetson Orin SoM Lifecycle is available through January 2032.

## Optional Accessories

Storage*	M.2 2280 NVMe SSD 480GB / 960GB
Wi-Fi	M.2 2230 Wi-Fi Module
WWAN Modem	M.2 3042/52 WWAN Modem
GPS	mPCIe GPS Module
UPS	BAT-2300v2 (Operating Temp. : -20°C ~ 60°C / -4°F ~ 140°F)

\*The NVMe SSD is a mandatory accessory for this product.

## Supported Camera List

Brand	Camera Part Number	SD-601-M12X-00 SD-601-G2-00	SD-601-M12X-01 SD-601-G2-01	SD-602P-IP66-01
oToBrite	oToCAM264ISP Series (2MP, Sony IMX390)	V (4)	V (4)	V (2)
oToBrite	oToCAM260ISP Series (5.36MP, Sony IMX490)	V (4)	V (4)	V (2)
oToBrite	oToCAM223 Series (2.95MP, Sony ISX031)	V (4)	V (4)	V (2)
e-con Systems	STURDeCAM25 (2MP, Omsemi AR0234CS)	-	V (4)	V (2)
e-con Systems	STURDeCAM31 (3MP, Sony ISX031)	-	V (4)	V (2)
e-con Systems	STURDeCAM81 (8MP, Omsemi AR0821)	-	V (4)	V (2)
StereoLabs	ZED X Stereo (Dual 2MP)	Tested	V (2)	V (2)*
StereoLabs	ZED X One 4K (8.2MP)	-	V (4)	V (2)

Brand	Camera Part Number	SD-604-G2	SD-650P-IP66-01	SD-650P-T1-01
oToBrite	oToCAM264ISP Series (2MP, Sony IMX390)	V (2)	V (4)	V (4)
oToBrite	oToCAM260ISP Series (5.36MP, Sony IMX490)	-	V (4)	V (4)
oToBrite	oToCAM223 Series (2.95MP, Sony ISX031)	V (2)	V (4)	V (4)
e-con Systems	STURDeCAM25 (2MP, Omsemi AR0234CS)	V (2)	V (4)	V (4)
e-con Systems	STURDeCAM31 (3MP, Sony ISX031)	V (2)	V (4)	V (4)
e-con Systems	STURDeCAM81 (8MP, Omsemi AR0821)	V (2)	V (4)	V (4)
StereoLabs	ZED X Stereo (Dual 2MP)	V (1)	V (2)	V (2)
StereoLabs	ZED X One 4K (8.2MP)	V (2)	V (4)	V (4)

V: Supported  
(n): Maximum number of camera connections