

IBOX-650P-T1

NVIDIA® Jetson AGX Orin™ 64GB Fanless
Edge AI Computer

- NVIDIA® Jetson AGX Orin™ 64GB SoM with 2048 CUDA Cores
- 100/1000BASE-T1 Automotive Ethernet Support
- 4 x GMSL-2 Cameras Support
- 1 x 10GbE for High-Speed Data Transmission
- 2 x Ethernet with PoE Support
- Optional Backup Battery for Emergency

Edge AI Application

**2 x CAN FD for Vehicle Connection**

For data communication of vehicle equipment

**2 x 2.5 GbE for IP Camera**

For high-resolution image capture or LiDAR connections

**Wide Range Power Input**

9~60V DC Input with Smart Power Management

**1 x 10GbE for High-Data Transmission**

High-speed network for local-server connection or backbone network communication

**2 x USB 3.2 for Camera / Sensor**

High-speed data transfer rate for a variety of IoT devices connections or external storage applications

**GMSL-2 for Vehicle Cameras Connection**

4 x FAKRA connectors provide robust vehicle camera connections

1 x H-CMTD for Automotive

1 x 100/1000BASE-T1 for modern vehicle devices and the system integration

Specifications

System

Module

- NVIDIA® Jetson AGX Orin™ 64GB (2048 CUDA cores + 12-core ARM Cortex-A78AE CPU + 64 GB LPDDR5)
- NVIDIA® Jetson AGX Orin™ 32GB (1792 CUDA cores + 8-core ARM Cortex-A78AE CPU + 32 GB LPDDR5)

Network

- 1 x Marvell® T1, 1 x Marvell® Industrial 10GbE, 2 x Intel® 2.5GbE

Security

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

Watchdog

- The self-reset mechanism for unresponsive system

Interface

Video

- 1 x HDMI®

Audio

- 1 x HD Audio from the HDMI®

Ethernet

- 1 x H-CMTD T1 connector, 3 x M12 X-coded connectors (Phoenix Contact®)

PoE

- 2 x IEEE 802.3at PoE PSE Class 4 (30 watts)

Camera

- 4 x GMSL-2 via FAKRA connectors

CAN

- 2 x CAN FD via M8 connector

USB

- 2 x USB Type-A connector for USB 3.2

Serial Port

- 1 x RS-232/422/485 via M12 connector

Mgmt. Port

- 1 x USB type-C for system recovery (device only)

Antennas

- 7 x Antenna holes

Internal Expansion

M.2

- 1 x M.2 3042/52 Key B supports WWAN w/ a Nano SIM
- 1 x M.2 2230 Key E supports Wi-Fi/BT

mPCIe

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

Storage

Type

- 1 x Internal 64GB eMMC (Pre-installed system BSP)
- 1 x M.2 2280 Key M supports NVMe SSD

Power

Power Input

- DC 9V-60V for 12/24/48V via M12 K-coded connector (Phoenix Contact®)

Power Protection

- OCP, OVP, Surge Protection, and Reversed Polarity Protection

Power Management

- Supports Smart Power Management

RTC Battery

- High-capacity coin cell battery for RTC

Battery (UPS)

- Backup battery for system power backup

Software

Operating System

- NVIDIA® JetPack 6.2 or above (Jetson Linux and NVIDIA® development tools included)

Environmental

- Operating Temp.**
- 25°C ~ 70°C (-13°F ~ 158°F), with SSD, ambient w/ air flow 0.6m/s (ONX8 model)
- Storage Temp.**
- 40°C ~ 80°C (-40°F ~ 176°F)
- Relative Humidity**
- 10% RH – 90% RH (non-condensing)
- Vibration (with SSD)**
- Random - IEC60068-2-64, random, 2.5G@5~500Hz, 1hr/axis
 - MIL-STD-810H - Method 514.8, Procedure I, Category 4
- Shock (with SSD)**
- MIL-STD-810H - Method 516.8, Procedure I, trucks and semi-trailers=15G (11ms) with SSD

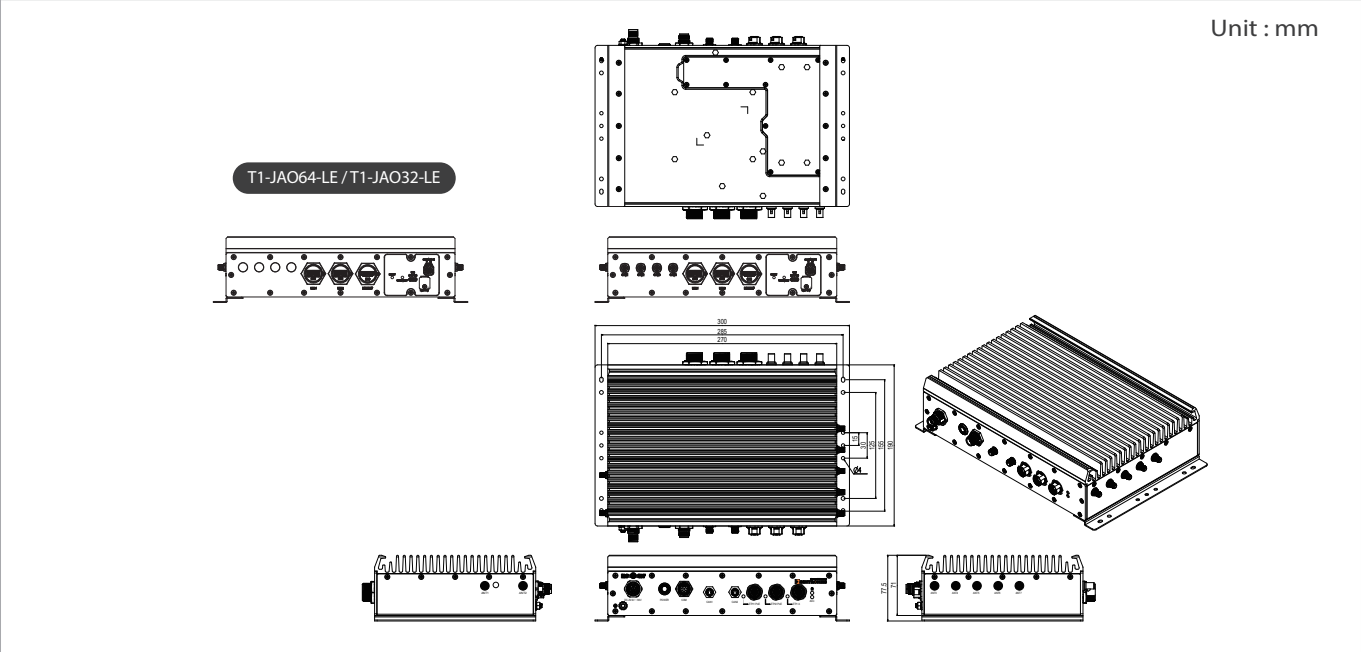
Certification / Standard

- CE, FCC Class A, UKCA, E-mark, EN50155, EN45545-2 (R25)

Mechanical

- Construction**
- Aluminum Alloy
- Mounting**
- Wall-mount
- Weight**
- 5.00 kg
- Dimensions**
- 300 (L) x 190 (W) x 77.5 (H) mm (11.9 x 7.5 x 3.06 inch)
- Ingress Protection**
- IP40

Dimensions



Ordering Information

Model Number	IBOX-650P-T1-01-JAO64	NVIDIA® Jetson AGX Orin™ 64GB / 1 x T1 / VDB-101 / 4 x GMSL-2 / 2 x PoE / 1 x 10GbE
	IBOX-650P-T1-01-JAO32	NVIDIA® Jetson AGX Orin™ 32GB / 1 x T1 / VDB-101 / 4 x GMSL-2 / 2 x PoE / 1 x 10GbE
	IBOX-650P-T1-JAO64-LE	NVIDIA® Jetson AGX Orin™ 64GB / 1 x T1 / 2 x PoE / 1 x 10GbE
	IBOX-650P-T1-JAO32-LE	NVIDIA® Jetson AGX Orin™ 32GB / 1 x T1 / 2 x PoE / 1 x 10GbE
Description	NVIDIA® Jetson AGX Orin™ 64GB SoM w/ 1 x T1 / 1 x 10GbE / 2 x 2.5GbE / 2x PoE / 4 x GMSL-2 / 2 x CAN FD / DC 9-60V / Edge AI Computing	
State of Origin	Made in Taiwan	

* The system BSP is pre-installed in the internal 64GB eMMC.
Jetson Orin SoM Lifecycle is available through January 2032.

Optional Accessories

Storage	M.2 2280 NVMe SSD 240GB / 480GB / 960GB
Wi-Fi	M.2 2230 Wi-Fi Module
WWAN	M.2 3042/52 WWAN Modem
GNSS	mPCIe GPS Module
Battery (UPS)	BAT-2300v2 (Operating Temp. : -10°C ~ 60°C (-4°F ~ 140°F))
Power Adapter	AC/DC 100-240V/24V 160W C14 DC plug power adapter

*BSP versions may vary depending on supported GMSL cameras.

Supported Camera List

Brand	Camera Part Number	IBOX-601-M12X-00 IBOX-601-G2-00	IBOX-601-M12X-01 IBOX-601-G2-01	IBOX-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	IBOX-604-G2	IBOX-650P-IP66-01	IBOX-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