

# IBOX-650P-IP66-2S IBOX-650P-IP66-DIO



## NVIDIA® Jetson AGX Orin Fanless Edge AI Computer



- NVIDIA® Jetson AGX Orin™ SoM with 2048 CUDA Cores
- IP66 Design (Waterproof and Dustproof) for Harsh Environment
- 1 x 10 GbE, 2 GbE with PoE via Phoenix Contact® M12 IP67 Connectors
- 2 x CAN FD
- 2 x RS-232/422/485 (2S model)
- 4 x DI 4 x DO 1 x AI 1 x PWM (DIO model)
- Supporting 4 x GMSL-2 Cameras (via FAKRA Connectors)
- 9 ~ 60VDC Input with Built-in Smart Ignition Power Management
- -25 ~ 70°C Operating with Fanless Design
- Patented Design of Emergency Backup Battery\*

\*This is a customized specification. If you have any needs, please contact our sales representative.

## 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



### 2 x USB 3.2 for Camera / Sensor

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



### 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



### GMSL-2 for Vehicle Cameras Connection

4 x FAKRA connectors provide robust vehicle camera connections

## Specifications

### System

#### Module

- NVIDIA® Jetson AGX Orin™ 64GB (2048 CUDA® cores GPU + 12-core Arm Cortex-A78AE CPU + 64 GB LPDDR5)

#### Network

- Marvell® Industrial 10GbE, Intel® Industrial 2.5GbE

#### Security

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

### Storage

#### Type

- 1 x 64GB eMMC (Built-in within SoM)
- 1 x M.2 2280 Key M slot supports NVMe SSD

### 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 (USB2.0 supported)

### Power

#### Supply Voltage

- 1 x Phoenix Contact® M12 K-coded connector for DC-IN 9~60V

#### Power Protection

- OCP, OVP, Surge and Reversed Polarity Protection

#### Power Management

- Ignition Detection with Smart Power Management

#### RTC Battery

- High-capacity coin cell battery for RTC

#### UPS (Option)

- Backup battery for system power backup

### Interface

#### Ethernet

- 1 x 10GbE, 2 x 2.5GbE w/ 2 x IEEE 802.3at PoE PSE Class 4 (PoE+ 30 watts) (3 x Phoenix Contact® M12 X-coded connectors)

\*M12 X-code cable is not included in the package.

#### USB

- 2 x USB Type-A/IP67 connector for USB 3.2

\*One port share 10Gbps bandwidth

#### Video

- 1 x HDMI® via Type-A w/ IP67

#### Audio

- 1 x HD Audio output from the HDMI®

#### COM

- 2 x M12 for 2 x RS-232/422/485 (1 x COM for DIO model)

#### CAN Bus

- 2 x M8 A-coded connectors for CAN FD

#### Mgmt. Port

- 1 x USB Type-C for System Recovery (Device only)

#### Camera

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

#### SIM Card

- 1 x Nano SIM card slot

### DIO Model

#### DIO

- 4 x DI, 4 x DO (12VDC/100mA)

#### Analog Input

- 1 x AI (5-60V)

#### PWM

- 1 x PWM Output (12VDC)

### Certification / Standard

- CE, FCC Class A, E-Mark, ECE R118, EN50155, EN45545-2 (R25)

**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 (with SSD)**

- MIL-STD-810H, Method 514.8, Procedure I, Cat.4 (Operating)
- IEC60068-2-64, random, 2.5G@5~500Hz, 1hr/axis

**Shock (with SSD)**

- MIL-STD-810H, Method 516.8, Procedure I, Trucks and semi-trailers=15G (11ms) with SSD (Operating)

**Software**

**Operating System / BSP**

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

**Mechanical**

**Construction**

- Aluminum Alloy

**Ingress Protection**

- IP66

**Thermal Design**

- Fanless Passive Cooling

**Mounting**

- Wall-mount

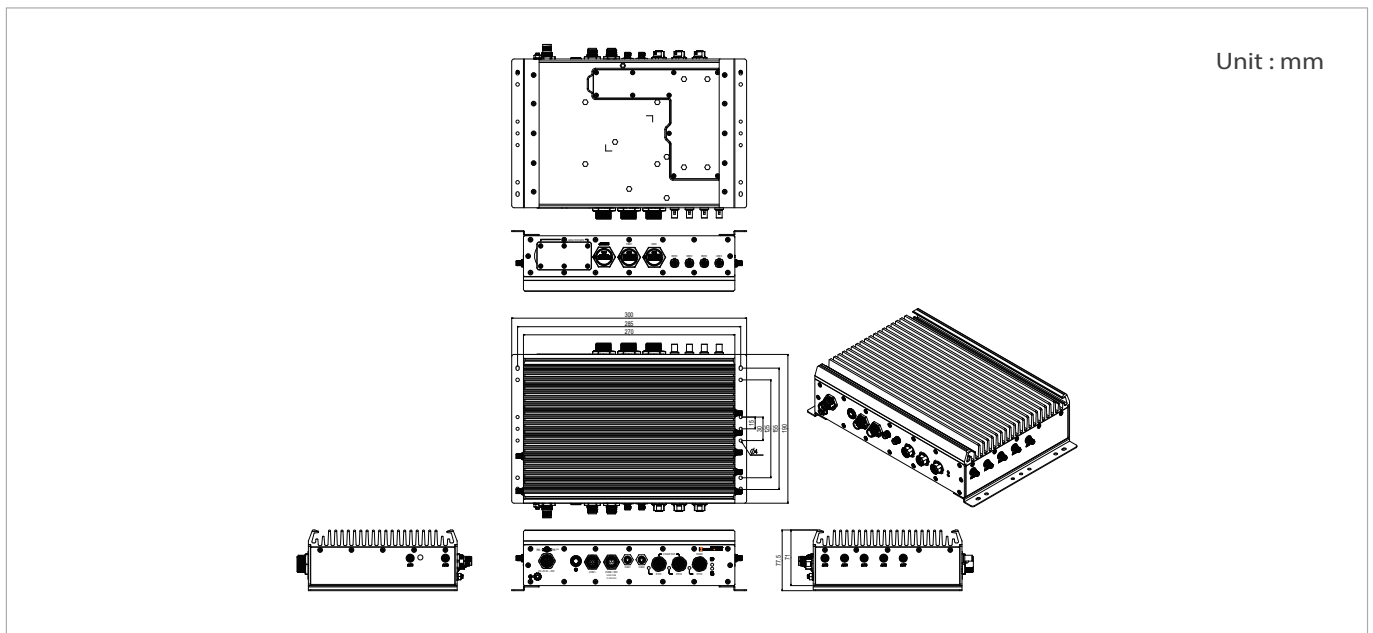
**Weight**

- 5100 g

**Dimensions**

- 300 (L) x 190 (W) x 77.5 (H) mm

**Dimensions**



**Ordering Information**

Model Number	IBOX-650P-IP66-2S-01-JAO64	NVIDIA Jetson AGX Orin 64GB / 1 x 10GbE / 2 x PoE / VDB-101 / 4 x GMSL-2 / 2 x COM
	IBOX-650P-IP66-2S-JAO64-LE	NVIDIA Jetson AGX Orin 64GB / 1 x 10GbE / 2 x PoE / 2 x COM
	IBOX-650P-IP66-DIO-01-JAO64	NVIDIA Jetson AGX Orin 64GB / 1 x 10GbE / 2 x PoE / VDB-101 / 4 x GMSL-2 / 4 x DI / 4 x DO
	IBOX-650P-IP66-DIO-JAO64-LE	NVIDIA Jetson AGX Orin 64GB / 1 x 10GbE / 2 x PoE / 2 x COM / 4 x DI / 4 x DO
Description	NVIDIA® Jetson AGX Orin™ w/ 1 x 10GbE / 2 x 2.5GbE / 1 x HDMI / 2 x CAN FD / DC 9-60V / IP66 Edge AI Computer	
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 / 1920GB
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
USB Type-A Cable	USB3.0 Waterproof (M) to USB3.0 (F); cable length: 1000mm
HDMI Type-A Cable	HDMI Waterproof (M) to HDMI (M); cable length: 2000mm

\*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