

# Embedded System Platform Solutions

As the leading Industrial System provider, IEI continues to extend the product footprint from component level to system integration service. Our strong knowledge of market and technology innovation offers reliability, flexibility and interoperability for all of our industrial products with choices of size, performance and features.

## 1. Transportation System

| Model Name      | Processor                                                                              |
|-----------------|----------------------------------------------------------------------------------------|
| IKARPC-07A      | Intel® Atom™ E3826 1.46 GHz                                                            |
| AFOKAR-08A      | RockChip RK3399(Dual-core Cortex-A72 up to 1.8GHz + Quad-core Cortex-A53 up to 1.5GHz) |
| IKARPC-W10A-BT  | Intel® Atom™ E3826 1.46 GHz                                                            |
| IVS-300-BT/ULT3 | Intel® Core™ i5-6300U 2.4 GHz, Intel® Celeron® J1900 2.0GHz                            |
| IVS-200-ULT2    | Intel® Core™ i5-5350U 1.8 GHz, Intel® Celeron® 3765U 1.9 GHz                           |
| IVS-110-AL      | Intel® Atom™ E3930 1.8GHz, Intel® Atom™ E3940 1.8GHz, Intel® Atom™ E3950 2.0GHz        |
| IRS-100-ULT3    | Intel® Core™ i5-6300U 2.4 GHz                                                          |
| SBOX-100-QM87   | Intel® Core™ i5-4400E 2.7 GHz                                                          |



## 2. Industrial Automation System

| Model Name     | Processor                                                                                    |
|----------------|----------------------------------------------------------------------------------------------|
| TANK-871-Q170  | Intel® Core™ i7-6700TE 2.4 GHz, Intel® Core™ i5-6500TE 2.3 GHz                               |
| TANK-870-Q170  | Intel® Core™ i7-6700TE 2.4 GHz, Intel® Core™ i5-6500TE 2.3 GHz                               |
| TANK-870e-H110 | Intel® Core™ i7-6700TE 2.4 GHz, Intel® Core™ i5-6500TE 2.3 GHz                               |
| TANK-860-HM86  | Intel® Core™ i5-4400E 2.7 GHz, Intel® Celeron® 2000E 2.2 GHz                                 |
| TANK-820-H61   | Intel® Core™ i5/i3, Pentium® processor                                                       |
| TANK-801-BT    | Intel® Celeron® J1900 2 GHz                                                                  |
| TANK-760-HM86  | Intel® Core™ i7-4700EQ 2.4 GHz, Intel® Core™ i5-4400E 2.7 GHz, Intel® Celeron® 2000E 2.2 GHz |
| TANK-620-ULT3  | Intel® Celeron® 3855U (1.6GHz, TDP=15W)                                                      |
| TANK-610-BW    | Intel® Celeron® N3160 1.6GHz                                                                 |



## 3. DIN-Rail Embedded System

| Model Name  | Processor                                    |
|-------------|----------------------------------------------|
| DRPC-130-AL | Intel® Atom™ x5-E3930 1.3GHz (up to 1.8 GHz) |
| DRPC-120-BT | Intel® Atom™ E3845 1.91 GHz                  |



## 4. Compact Size Embedded System

| Model Name  | Processor                                    |
|-------------|----------------------------------------------|
| ITG-100-AL  | Intel® Atom™ x5-E3930 1.3GHz (up to 1.8 GHz) |
| uIBX-250-BW | Intel® Celeron® N3160 1.6GHz                 |
| uIBX-230-BT | Intel® Celeron® N2930 1.83 GHz               |



## 5. Digital Signage Embedded System

| Model Name | Processor                    |
|------------|------------------------------|
| IDS-300-BW | Intel® Celeron® N3160 1.6GHz |



## 6. Medical Embedded System

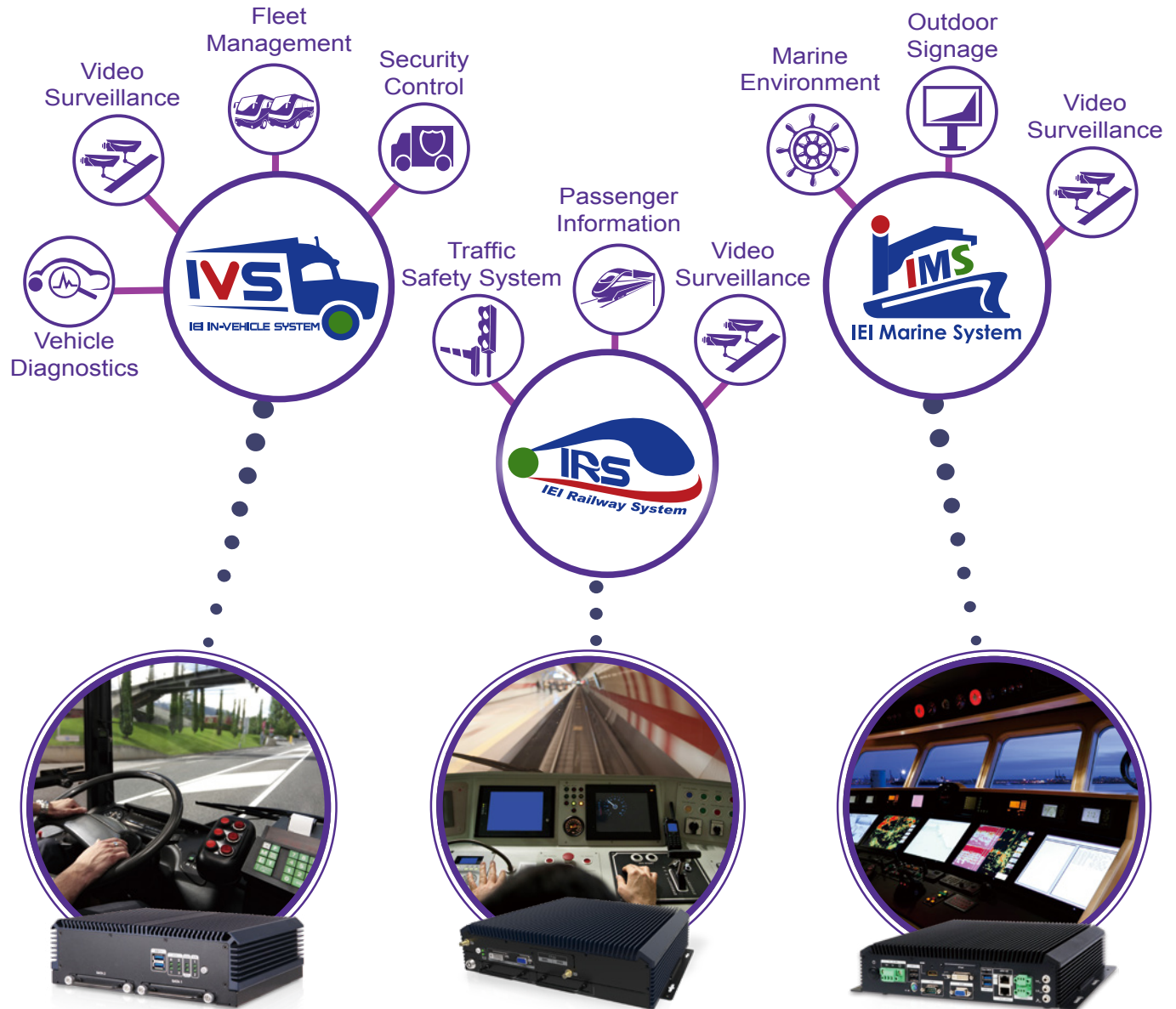
| Model Name    | Processor                                      |
|---------------|------------------------------------------------|
| HTB-100-HM170 | Intel® Core™ i7-6822EQ, Intel® Core™ i5-6442EQ |



# Transportation Solution

IEI transportation series is divided into three categories for different markets: in-vehicle, railway and marine. All these products have passed harsh vibration and shock test and can withstand in extreme temperature. This series allows wide voltage input and features multiple communication options. In addition, our products are in fanless design suitable for various markets and with rich I/O for different applications.

## Ruggedized Solution



### ■ IVS & In-Vehicle PPC Series

#### In-Vehicle Features

- Wide working temperature
- Wide DC input range
- E-mark certification
- OBD-II function
- Multi wireless communication
- IP 4X protection

### ■ IRS Series Railway Features

- Wide working temperature
- Support DVI and VGA dual display
- EN-50155 certification
- Dual SIM slot
- M12 connector

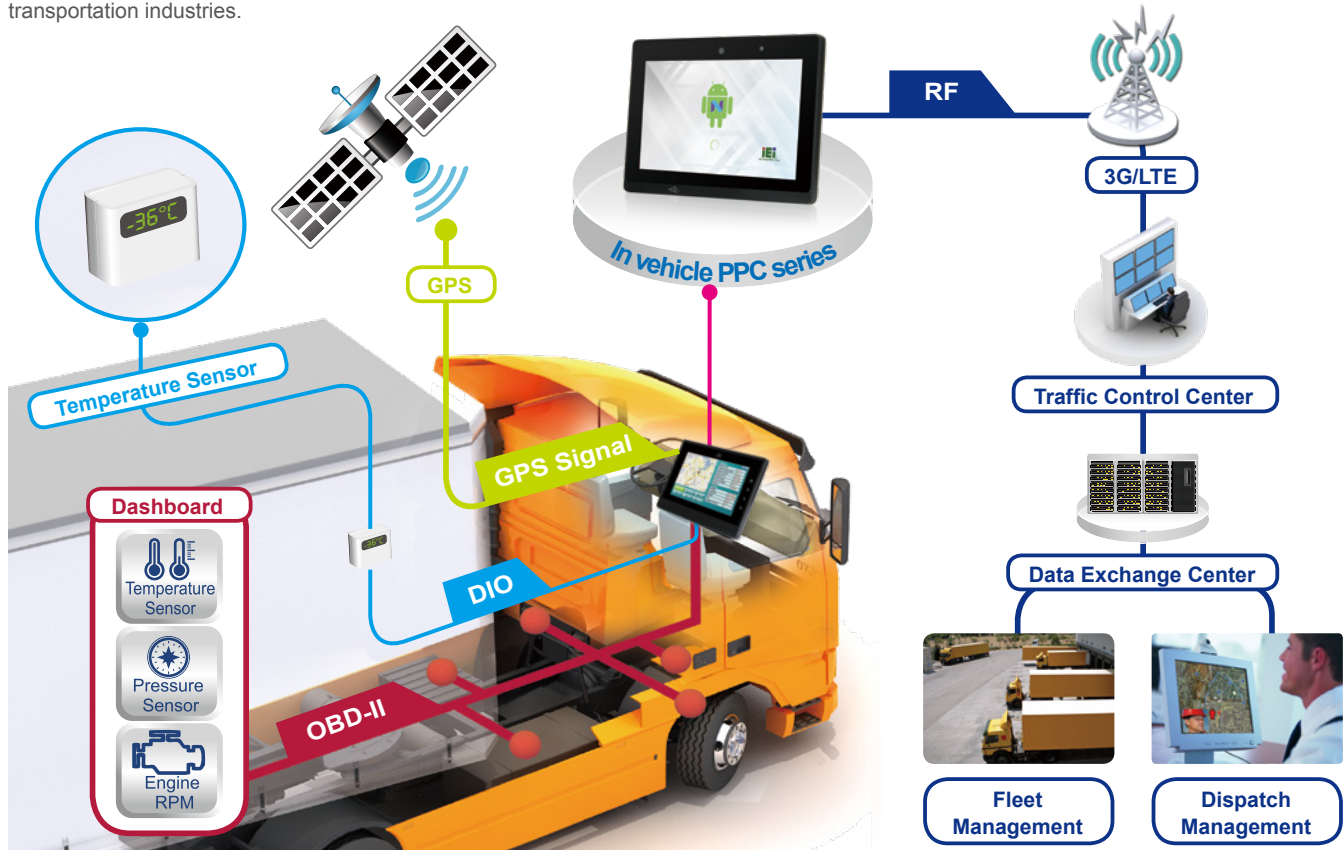
### ■ SBOX Series Marine Features

- Isolation protection ports
- Three independent displays
- Full range dimming
- DNV, IEC 60945 4th, IACS-E10, IEC 61174 certification
- IP 4X protection



## In-Vehicle PPC Series

Logistics industry's commonly used satellite positioning systems, electronic maps, Internet access, mobile communication systems with 3.75G/LTE/Wi-Fi/Bluetooth/GPS/RFID are all combined together in our solutions for fleet management, logistics, manufacturing and passenger transportation industries.



## Key Features

### ■ High Brightness Screen



The in vehicle panel PC series is equipped with an ultra-high brightness LCD panel to help drivers avoid low visibility caused by direct sunlight.

### ■ Communication

The transportation series reserves multiple PCIe Mini slots for different network communication. Users can use CDMA/GPRS/HSUPA+/LTE to transmit and receive real-time data, use Wi-Fi for data acquisition, or use GPS to get accurate location data.

### ■ CAN Bus/OBD-II (Optional)

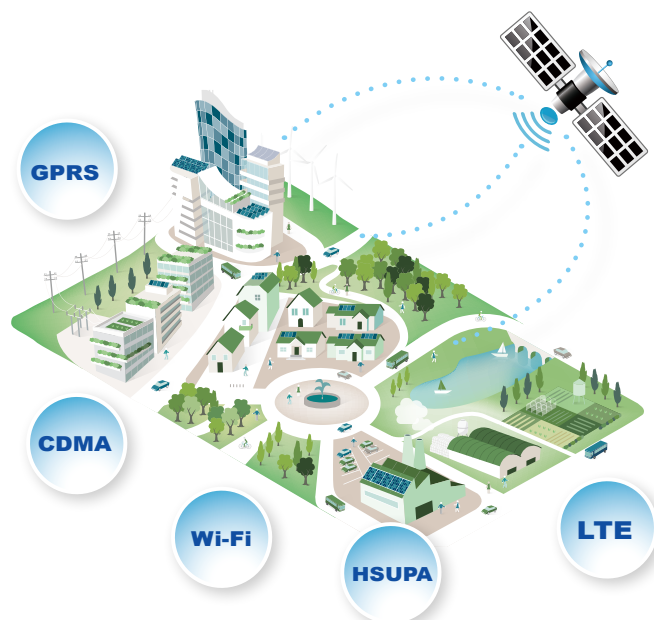


The in-vehicle panel PC series supports On Board Diagnostics (OBD) and Controller Area Network (CAN bus) and is built-in with OBD-II and CAN bus for real time vehicle diagnostic. CAN has a high degree of flexibility to adjust capacity which can be added in the existing network of nodes.

### ■ X86/ARM solution



The in vehicle panel PC series has two solutions, Intel and ARM architecture for customers. You can choose Intel solution which supports Windows OS, or you can choose ARM solution which supports Android OS.

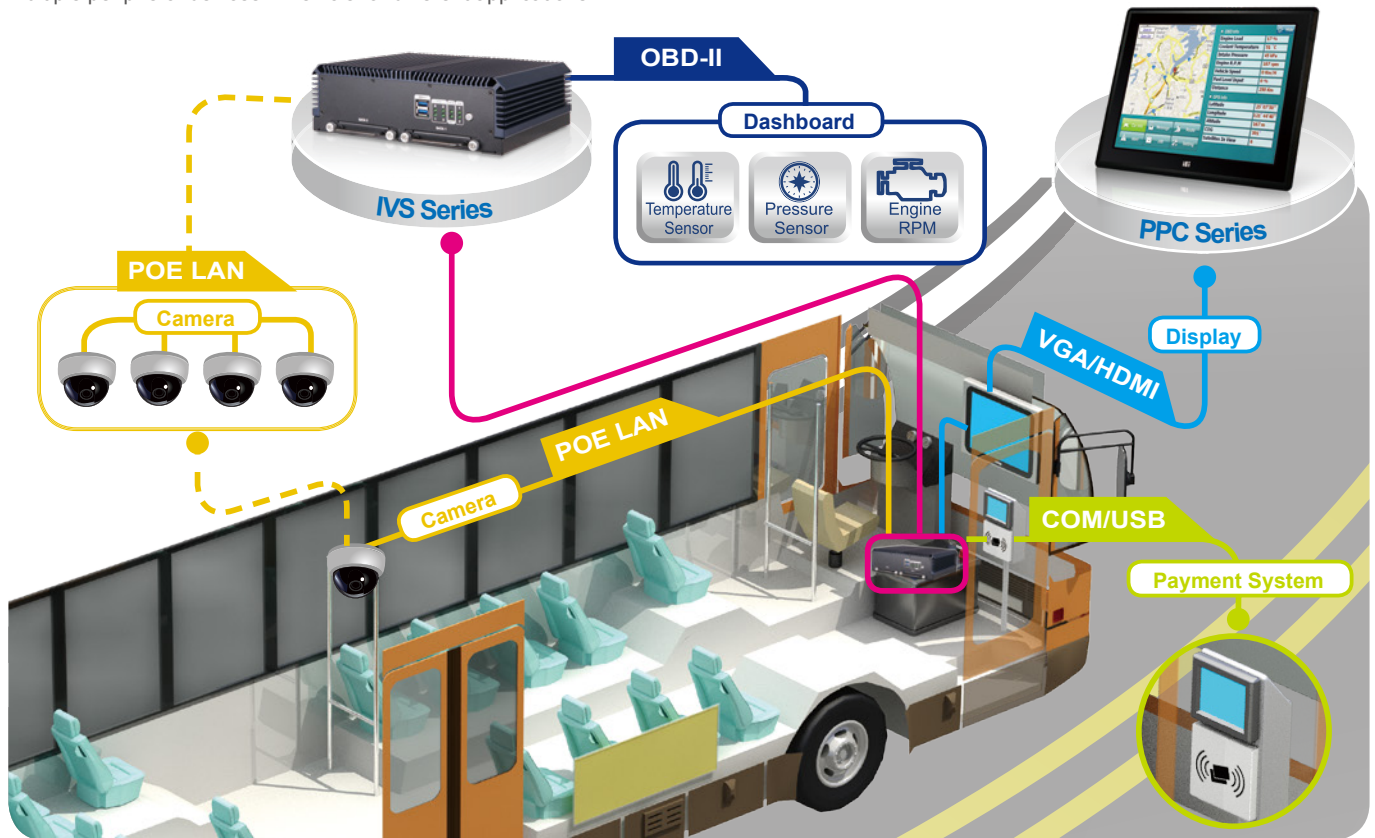






## In-Vehicle: IVS Series

The IVS series vehicle box PC is designed with reliable performance for harsh environments. Rich I/O ports are provided to connect with multiple peripheral devices in vehicle for different applications.



## Key Features

### ■ Wide Range Temperature



IEI fanless product series has leading-edge thermal design and has been tested under extreme temperature conditions in order to ensure that IEI fanless products can work in any harsh environment.

### ■ E-mark Certification



All vehicles, vehicle parts, and electronic products for the car must be enforced EMC testing. IEI IVS and in-vehicle panel PC series product all get E-Mark certification which are required for the European market.

### ■ Vibration and Shock Resistance



In-vehicle systems must be able to withstand the shock and vibration that comes with driving a vehicle. IEI transportation series meet the requirement for different environments and has passed particular verification dependent on MIL-STD-810G 514.5 standard, EN61373 for railway market, EN60721 for in-vehicle market.

### ■ Particular Power Solution



We design wide power input to prevent surge when starting engine. We develop power management for users. For in-vehicle market, we design wide DC input and ACC power to ensure users can operate the system well.







## Railway: IRS Series

IEI's Railway System (IRS) is focused on the rolling stock market with a variety of advanced technologies designed. The IRS-100 series is compliant with EN 50155 standard. The IRS-100 provides multiple storage bays for data saving, lockable connectors, GPS function and Wi-Fi for wireless communication. Users can control passenger information system (PIS) and network video recorder (NVR) through the IRS-100. The popular IP cameras for surveillance application can also be implemented to provide real time video monitoring to ensure passengers' safety.



## Key Features

### ■ Dual SIM Slot



The IRS-100 offers dual SIM slot with the ability to automatically switch between two different networks in order to maintain seamless connectivity in remote areas. The system supports GPRS/UMTS/HSDPA/LTE technologies for transmission.

### ■ Lockable M12 Connectors



To against vibration and shock, the M12 connector is used for dual LAN communication which offers a reliable performance for high-quality data acquisition or transmission. The M12 connector can ensure that all cables can be tightly secured and improve anti-vibration capability.

### ■ Multiple Isolated Port Protection



The IRS-100 provides 1.5kV isolation on the RS-232/422/485, DIO and power in order to protect from any stray electrical signals from other devices and to ensure stable operation in harsh environments.

Front View



Rear View



## ■ Operating Temperature and EN 50155 Compliance

EN50155 is the standard for electronic equipment used on rolling stock. IEI's railway system (IRS-100) complies with EN50155 TX column 2 standard and passed tests for vibration, shock, and wide temperature. IRS-100 can run in an extremely hot or cold environment -40°C ~ 70°C.

| Standard                           | EN50155 T1    | EN50155 T2    | EN50155 T3    | EN50155 TX    |
|------------------------------------|---------------|---------------|---------------|---------------|
| Internal Cabinet Temperature Range | -25°C - +55°C | -40°C - +55°C | -25°C - +70°C | -40°C - +70°C |

## ■ Wide Range of DC/DC Converters

Railway rolling stock is required to meet the requirement of EN50155 for electronic equipment.

IRS-100 has wide range of input voltages of 24VDC~110VDC (±40%), therefore, users are able to install variety devices in different railway rolling stock applications.

| Nominal Input              | 24V    | 37.5V  | 48V    | 72V    | 96V     | 110V    |
|----------------------------|--------|--------|--------|--------|---------|---------|
| Input Range (0.7-1.25 Vin) | 17-30V | 26-47V | 34-60V | 50-90V | 67-120V | 77-137V |
| Brownout 100ms (0.6xVin)   | 14V    | 22V    | 29V    | 43V    | 58V     | 66V     |
| Transient 1s (1.4xVin)     | 34V    | 61V    | 67V    | 101V   | 135V    | 154V    |

## ■ Compliant with Electromagnetic Interference Requirements

Railway electronic systems are subjected to different level of electromagnetic interference requirements.

| Standard          | Parameter       |                   | EN50155           |                             |
|-------------------|-----------------|-------------------|-------------------|-----------------------------|
| Rolling Equipment | Vibration       | Category < 0.3 kg | Shock (half sine) | Long. / Trans. / Vert. axis |
|                   | Frequency range | 5 - 150 Hz        | Peak acceleration | 5 g / 2 g / 1 g             |
|                   | Acceleration    | 5 g               | Duration          | 50 ms / 20 ms / 20 ms       |

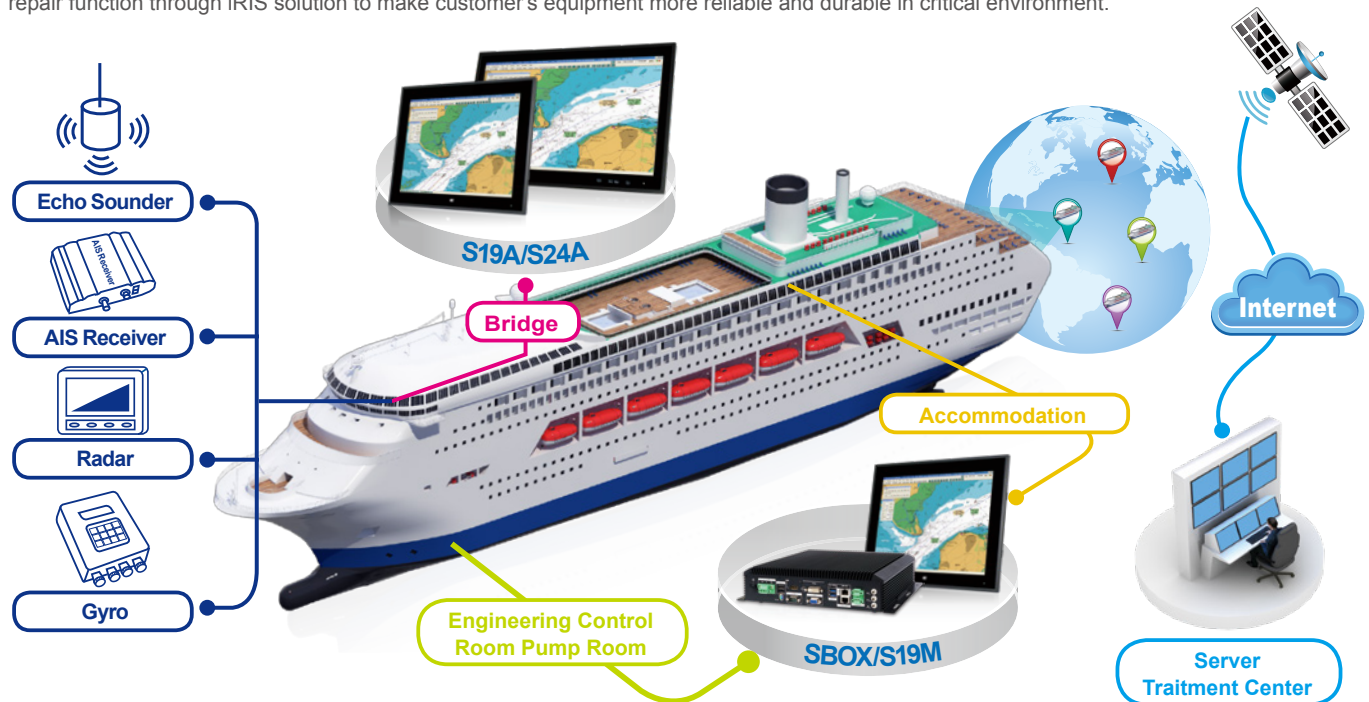
## ■ Compliant with Mechanical Requirements

Railway electronic systems are subjected to high-level mechanical environmental constraints depending on their implementation.

|                                                                                                                                  | Generic Standards                         | EN 50121-3 and -4                                                                                                      | EN 50155                                               |
|----------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|
| Radio electrical conducted emission <30MHz<br>0,15 - 0,5 MHz (quasi peak)<br>0,5 - 5 MHz (quasi peak)<br>5 - 30 MHz (quasi peak) | EN55032<br>EN55011                        | EN55011 level +20 dB :<br>79 dB/μV/m+20dB (quasi peak)<br>73 dB/μV/m+20dB (quasi peak)<br>73 dB/μV/m+20dB (quasi peak) | Level:<br>70 dB/μV/ qp<br>70 dB/μV/ qp<br>70 dB/μV/ qp |
| Radio magnetic emission qp at 10m >30MHz<br>30 - 80 MHz<br>80 - 230 MHz<br>230 - 1,000 MHz                                       | EN55032<br>EN55011                        | EN55011 level class B :<br>40 dB/μV/m (quasi peak)<br>40 dB/μV/m (quasi peak)<br>47 dB/μV/m (quasi peak)               | Level:<br>70 dB/μV/m<br>< 70 dB/μV/m<br>< 70 dB/μV/m   |
| Electrostatic discharge immunity<br>(Internal)                                                                                   | EN61000-4-2 or<br>IEC-801-2               | Level: 6KV contact cond. B<br>Level: 8KV air cond. B                                                                   |                                                        |
| Radio frequency electromagnetic fields immunity<br>(80 - 1,000 MHz)                                                              | EN61000-4-3 or<br>IEC-801-3<br>EN50140    | Level: 10V/m condition A<br>Level: 20V/m condition A                                                                   | Level: 10V/m<br>Level: 20V/m                           |
| Fast transient/burst immunity<br>(DC power port and I/O ports)                                                                   | EN61000-4-4 or<br>IEC-801-4               | Level: 0.5KV condition A<br>Level: 2KV condition A                                                                     | Level: 2KV                                             |
| Surge immunity                                                                                                                   | EN61000-4-5 or<br>IEC-801-5               | Level: 2KV condition B<br>Impedance 42 Ohm                                                                             | Level: 1.8 KV                                          |
| Conducted disturbances induced by radio<br>frequency fields immunity (150KHz-80MHz)<br>(DC power port and I/O port)              | EN50141 or<br>EN61000-4-6 or<br>EN50121-4 | Level: 3V condition A<br>Modulation 80% AM<br>Impedance 150 Ohm<br>Level: 10V condition A                              |                                                        |
| Damped oscillatory magnetic field immunity                                                                                       | EN61000-4-10                              | Level: 30A/m condition B                                                                                               |                                                        |

## Marine: SBOX Series

It is difficult to send out technical support for maritime field application due to the location limitation. The best way to solve the urgent issue is remote troubleshooting with IEI iRIS solution. IEI marine-grade solutions provide the most convenient method of real-time system alert notice and repair function through iRIS solution to make customer's equipment more reliable and durable in critical environment.



## Key Features

### ■ 3 independent displays: HDMI, DVI, and VGA

The three simultaneously independent displays are supported via the on-board video output combinations of VGA, DVI and HDMI. This versatile combination of display output options makes the marine system ideal for multi-monitor required applications in the bridge room.

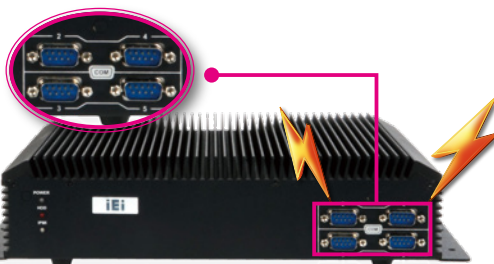


### ■ Multiple Isolated Ports for Comprehensive Protection against Electrical Surges

Ground loop and electric surges are common in the marine applications of electronic products due to the dense placement of devices. These stray electrical signals can cause equipment damage or malfunction.

#### ■ 2.5 kV isolation protection on the RS-232/422/485

IEI marine computer is protected from any stray electrical signals from other devices on the ship. Electric surges that were generated from other electronic devices which often passed through serial lines to the marine computer can cause severe damage and malfunction to the computers.



#### ■ Two independent CAN 2.0B channels with 2.5 kV isolation protection

CAN 2.0B is a kind of marine electronic data network for communication between marine electronic devices such as chart plotters, navigation instruments, GPS receivers, etc.

#### ■ Isolated 18 V~24 V DC power 2250 V DC Input to Output Basic Insulation





## DNV Compliance

The DNV regulation is one of the most stringent standards in the maritime industry. It sets the minimum requirements of devices based on where the device is located. IEI marine series complies with DNV regulations and has passed tests for temperature, humidity, vibration, EMC and water- and dust-proof levels.

### ■ Operating Temperature

The marine series can run in wide temperature environment from -15°C to 55°C.

| Temperature                     | Class A                                                | Class B                                                            | Class C                                  | Class D                              |
|---------------------------------|--------------------------------------------------------|--------------------------------------------------------------------|------------------------------------------|--------------------------------------|
| Location                        | Machinery spaces, control rooms, accommodation, bridge | Inside cubicles, desks, etc. with temperature rise of 5° C or more | Pump rooms, holds, rooms with no heating | Open deck, masts                     |
| Minimum equipment specification | Ambient temperatures: +5°C to +55°C                    | Ambient temperatures: +5° C to +70°C                               | Ambient temperatures: -25°C to +55°C     | Ambient temperatures: -25°C to +70°C |

### ■ Humidity

The marine series conforms to DNV class A of humidity.

| Humidity                        | Class A                                                              | Class B                                                    |
|---------------------------------|----------------------------------------------------------------------|------------------------------------------------------------|
| Location                        | Locations where special pre-cautions are taken to avoid condensation | All other locations                                        |
| Minimum equipment specification | Relative humidity up to 96 % at all relevant temperatures.           | Relative humidity up to 100 % at all relevant temperatures |

### ■ Vibration

The marine series is subjected to DNV Class A vibration test and can be widely used on bulkheads, beams, deck and bridge.

| Vibration                       | Class A                                                                                                                         | Class B                                                                                                                     | Class C                                                                                                                        |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|
| Location                        | On bulkheads, beams, deck, bridge                                                                                               | On machinery such as internal combustion engines, com-pressors, pumps, including piping on such machinery                   | Masts                                                                                                                          |
| Minimum equipment specification | Frequency range: 3-13.2 Hz,<br>Amplitude: 1.0 mm (peak value)<br>Frequency range: 13.2-100 Hz,<br>Acceleration amplitude: 0.7 g | Frequency range: 3-25 Hz,<br>Amplitude: 1.6 mm (peak value)<br>Frequency range: 25-100 Hz,<br>acceleration amplitude: 4.0 g | Frequency range: 3-13.2 Hz,<br>Amplitude: 3.0 mm (peak value)<br>Frequency range: 13.2-50 Hz,<br>Acceleration amplitude: 2.1 g |

### ■ EMC

Being different to CE and FCC standards, DNV regulations especially emphasize the importance of electromagnetic compatibility. IEI marine series is compliant with strict class B level and can provide a safe operating environment of sailing period.

| Vibration                       | Class B                                                                                                                                                                                                                   |                                                                                             |                                                                                                                          |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|
| Location                        | All locations including bridge and open deck                                                                                                                                                                              |                                                                                             |                                                                                                                          |
| Minimum equipment specification | Immunity                                                                                                                                                                                                                  |                                                                                             |                                                                                                                          |
|                                 | Conducted Low Frequency<br>(Test 3.14.4)                                                                                                                                                                                  | Electrical Fast Transient/Burst<br>(Test 3.14.5)                                            | Electrical Slow Transient Surge<br>(Test 3.14.6)                                                                         |
|                                 | AC 50/60 Hz Supply Voltage up to 15 <sup>th</sup> harmonics: 10% of UN<br>15 <sup>th</sup> to 100 <sup>th</sup> harmonics: decreasing from 10% to 1% of UN<br>100 <sup>th</sup> to 200 <sup>th</sup> : harmonics 1% of UN | DC Supply Voltage Frequency Sweep Range: 50 Hz to 10 kHz<br>Signal Level: 3 V r.m.s. max 2W | Amplitude :<br>2 kV line on power supply port/earth;<br>1 kV on I/O data control and communication ports(coupling clamp) |
|                                 | Conducted Radio Frequency<br>(Test 3.14.7 – Table 3.20/3.21)                                                                                                                                                              | Radiated Electromagnetic Field<br>(Test 3.14.8)                                             | Electrostatic Discharge<br>(Test 3.14.9)                                                                                 |
|                                 | Frequency range:150 kHz - 80 MHz<br>Voltage level (e.m.f.): 3 V r.m.s.<br>Spot frequencies: 2/3/4/6.2/8.2/12.6/16.5/18.8/22/25 MHz.<br>Voltage level (e.m.f.) :10 V r.m.s.                                                | Frequency range: 80 MHz to 2 GHz<br>Electric field strength: 10 V/m                         | Output voltage Air: 8 kV<br>Contact: 6 kV                                                                                |
|                                 | Emission                                                                                                                                                                                                                  |                                                                                             |                                                                                                                          |
|                                 | Radiated (Test 3.14.10 - 11)                                                                                                                                                                                              |                                                                                             |                                                                                                                          |
|                                 | Enclosure Port                                                                                                                                                                                                            | Frequency range                                                                             | Measuring bandwidth                                                                                                      |
|                                 | EMC B<br>All locations including bridge and open deck                                                                                                                                                                     | 0.15-0.3 MHz                                                                                | 9 kHz                                                                                                                    |
|                                 |                                                                                                                                                                                                                           | 0.30-30 MHz                                                                                 | 9 kHz                                                                                                                    |
|                                 |                                                                                                                                                                                                                           | 30-2000 MHz                                                                                 | 120 kHz                                                                                                                  |
|                                 |                                                                                                                                                                                                                           | Except: 156-165 MHz                                                                         | 9 kHz                                                                                                                    |
|                                 | Conducted (Test 3.14.10 - 12)                                                                                                                                                                                             |                                                                                             |                                                                                                                          |
|                                 | Power Port                                                                                                                                                                                                                | Frequency range                                                                             | Measuring bandwidth                                                                                                      |
|                                 | EMC B<br>All locations including bridge and open deck                                                                                                                                                                     | 10-150 kHz                                                                                  | 200 Hz                                                                                                                   |
|                                 |                                                                                                                                                                                                                           | 150-350 kHz                                                                                 | 9 kHz                                                                                                                    |
|                                 |                                                                                                                                                                                                                           | 0.35 - 30 MHz                                                                               | 9 kHz                                                                                                                    |
|                                 | Limits (quasi-peak)                                                                                                                                                                                                       |                                                                                             |                                                                                                                          |
|                                 | 80 - 52 dBµV/m                                                                                                                                                                                                            |                                                                                             |                                                                                                                          |
|                                 | 52 - 34 dBµV/m                                                                                                                                                                                                            |                                                                                             |                                                                                                                          |
|                                 | 54 dBµV/m                                                                                                                                                                                                                 |                                                                                             |                                                                                                                          |
|                                 | 24 dBµV/m                                                                                                                                                                                                                 |                                                                                             |                                                                                                                          |
|                                 | 96 – 50 dBµV                                                                                                                                                                                                              |                                                                                             |                                                                                                                          |
|                                 | 60 – 50 dBµV                                                                                                                                                                                                              |                                                                                             |                                                                                                                          |
|                                 | 50 dBµV                                                                                                                                                                                                                   |                                                                                             |                                                                                                                          |

### ■ Enclosure

The marine series is compliant with high waterproof and dustproof level. The front bezel complies with IP66 rating and the rear side complies with IP22.

| Enclosure                       | Class A                              | Class B     | Class C                                             | Class D                       |
|---------------------------------|--------------------------------------|-------------|-----------------------------------------------------|-------------------------------|
| Location                        | Control rooms, accommodation, bridge | Engine room | Open deck, masts, below floor plates in engine room | Submerged application, bilges |
| Minimum equipment specification | IP22                                 | IP44        | IP56                                                | IP68                          |

# E-Window Tool Kit



Innovative E-windows technology is a new modular way of adding flexible functionality to a wide range of device. Using standardized component helps system integrators easily add more features without any costly efforts.

## E-Window

### Features

- Easy maintenance
- Various module & I/O plate with flexible customization
- Integration of multiple functions
- Easy for replacement with different modules

### Supported Model

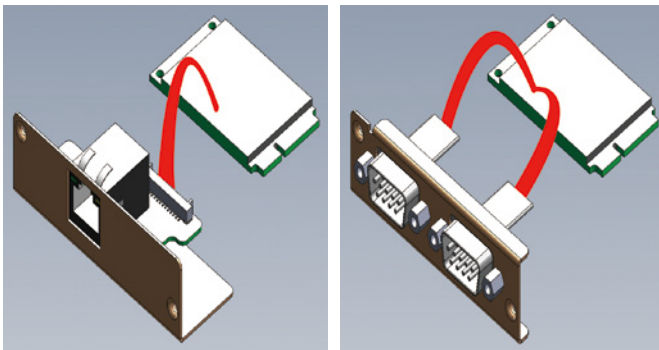
#### Transportation System

IVS-110-AL

#### Industrial Automation System

TANK-871-Q170

TANK-870e-H110



#### E-Window I/O Plate with PCIe Mini Card

An E-Window module uses a PCIe Mini slot embedded on the motherboard.



E-MPCIE-LAN-R10



E-MPCIE-DLAN-R10

### Ordering Information

| Part No.               | Description                                                                                                    |
|------------------------|----------------------------------------------------------------------------------------------------------------|
| E-MPCIE-DLAN-R10       | PCIe Mini card supports 2-port GbE with Intel I211 controller, with PMS 194C I/O bracket and 250mm cable       |
| E-MPCIE-LAN-R10        | PCIe Mini card supports 1-port GbE with Realtek RTL8111E controller, with PMS 194C I/O bracket and 250mm cable |
| E-MPCIE-UART-KIT01-R10 | PCI Express Mini supports quad RS-232/422/485 port module                                                      |

# Transportation System



**New**



| Model Name     |                         | IKARPC-07A-BT                                                                                                                                               | AFOKAR-08A-RK39                                                                                     | IKARPC-W10A-BT                                                                                         |
|----------------|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|
| Chassis        | Color                   | Black C + Silver                                                                                                                                            | Black C + Silver                                                                                    | Blue C + Black C                                                                                       |
|                | Dimensions (WxDxH) (mm) | 210 x 154 x 28                                                                                                                                              | 210 x 154 x 33.9                                                                                    | 277 x 186 x 27                                                                                         |
|                | System Fan              | Fanless                                                                                                                                                     |                                                                                                     |                                                                                                        |
|                | Chassis Construction    | PC + ABS plastic                                                                                                                                            | PC + ABS plastic front, Metal rear                                                                  | PC + ABS plastic                                                                                       |
| Display        | Size                    | 7"                                                                                                                                                          | 8"                                                                                                  | 10.1"                                                                                                  |
|                | Resolution              | 1024 × 3 (RGB) × 600                                                                                                                                        | 800(RGB) × 1280                                                                                     | 1280 x 800                                                                                             |
|                | Brightness (cd/m²)      | 500                                                                                                                                                         | 500                                                                                                 | 350                                                                                                    |
|                | Contrast Ratio          | 700:1                                                                                                                                                       | 800 : 1                                                                                             | 800:1                                                                                                  |
|                | Pixel Pitch (mm)        | 0.05 (W) × 0.15 (H)                                                                                                                                         | 0.13455(H) × 0.13455(V)                                                                             | 0.0565 (W) × 0.1695 (H)                                                                                |
|                | Viewing Angle (H/V)     | 130° (H) / 140° (V)                                                                                                                                         | 85/85/85 Deg.                                                                                       | 150° (H)/145° (V)                                                                                      |
|                | Touchscreen             | Projected capacitive touch with USB interface                                                                                                               | Projected capacitive with AG coating                                                                | Projected capacitive touch with USB interface                                                          |
| Motherboard    | CPU                     | Intel® Atom™ processor E3826 (dual-core, 1.46 GHz, 7W)                                                                                                      | Rockchip RK3399 (Dual-core Cortex-A72 up to 1.8GHz + Quad-core Cortex-A53 up to 1.5GHz)             | Intel® Atom™ processor E3826 (dual-core, 1.46 GHz, 7W)                                                 |
|                | Chipset                 | SoC                                                                                                                                                         |                                                                                                     |                                                                                                        |
|                | System Memory           | On-board 2 GB SDRAM                                                                                                                                         | On-board 2GB LPDDR3-1866                                                                            | On-board 2 GB DDR3L                                                                                    |
| Storage        | Hard Drive              | N/A                                                                                                                                                         | N/A                                                                                                 | 1 x 2.5" SATA 3Gb/s HDD/SSD drive bay                                                                  |
|                | SD card                 | 1 x microSD slot (supports SD 2.0, max. 32 GB)                                                                                                              | 1 x Micro SD slot                                                                                   | 1 x SD slot (supports SD 2.0, max. 32 GB)                                                              |
|                | Flash                   | N/A                                                                                                                                                         | On-board 16GB eMMC NAND FLASH                                                                       | N/A                                                                                                    |
|                | mSATA                   | 1 x mSATA (SATA 3Gb/s) optional                                                                                                                             | N/A                                                                                                 | N/A                                                                                                    |
| Communication  | WLAN                    | PCIe Mini Wi-Fi 802.11a/b/g/n/ac (optional)                                                                                                                 | On-board 802.11 a/b/g/n/ac                                                                          | PCIe Mini Wi-Fi 802.11a/b/g/n/ac (optional)                                                            |
|                | Bluetooth               | BT 4.0/3.0+HS (combo with WLAN optional module)                                                                                                             | Bluetooth V4.1                                                                                      | BT 4.0/3.0+HS (combo with WLAN optional module)                                                        |
|                | WWAN                    | PCIe Mini WCDMA/HSDPA/HSUPA (optional)                                                                                                                      | PCIe Mini LTE (optional)                                                                            | PCIe Mini WCDMA/HSDPA/HSUPA (optional)                                                                 |
|                | RFID                    | N/A                                                                                                                                                         | 13.56 MHz ISO4443 A/B, read-write capable, ISO 14443A (MIFARE), ISO 14443B (FeliCa)                 | N/A                                                                                                    |
|                | GPS                     | On-board GPS                                                                                                                                                |                                                                                                     |                                                                                                        |
| I/O Interfaces | 20-pin Connector        | 1 x GbE LAN, 1 x OBD-II/J1939, 1 x USB 2.0                                                                                                                  | 1 x OBD-II/J1939, 1 x USB 2.0                                                                       | N/A                                                                                                    |
|                | 24-pin Connector        | 1 x Audio line-out(R+L), 1 x Audio line-in, 1 x RS-232, 4-bit digital I/O (2-bit input, 2-bit output)                                                       | 1 x Audio out, 1 x RS-232, 1 x RS-485, 4-bit digital I/O with isolation (2-bit input, 2-bit output) | N/A                                                                                                    |
|                | USB 3.1 Gen 1           | 1                                                                                                                                                           |                                                                                                     |                                                                                                        |
|                | USB 2.0                 | 1                                                                                                                                                           | 20-pin connector                                                                                    | 1                                                                                                      |
|                | Ethernet                | N/A                                                                                                                                                         | N/A                                                                                                 | 1 x RJ-45 PCIe GbE by Realtek 8111E                                                                    |
|                | COM Port                | N/A                                                                                                                                                         | 24-pin connector                                                                                    | 2 x DB-9 RS-232                                                                                        |
|                | Digital I/O             | N/A                                                                                                                                                         | 24-pin connector                                                                                    | 8-bit digital I/O (4-bit input, 4-bit output)                                                          |
|                | CAN-Bus/OBD-II          | N/A                                                                                                                                                         | 20-pin connector                                                                                    | 1 x DB-9 OBD-II/J1939                                                                                  |
|                | Display                 | 1 x HDMI                                                                                                                                                    |                                                                                                     |                                                                                                        |
|                | SIM                     | 2 x on-board SIM card slot                                                                                                                                  | 1 x on-board SIM card slot                                                                          | 2 x on-board SIM card slot                                                                             |
|                | Antenna                 | 1 x GPS, 1 x WWAN                                                                                                                                           |                                                                                                     |                                                                                                        |
| Expansions     | PCIe Mini               | 1 x Full-size PCIe Mini (reserved for mSATA module), 1 x Full-size PCIe Mini (reserved for WWAN module), 1 x Half-size PCIe Mini (reserved for WLAN module) | 1 x Full-size PCIe Mini (reserved for WWAN)                                                         | 1 x Full-size PCIe Mini (reserved for WWAN module), 1 x Full-size PCIe Mini (reserved for WLAN module) |
| Multimedia     | Speaker                 | 1 x Speaker (2 W)                                                                                                                                           |                                                                                                     |                                                                                                        |
|                | Camera                  | 2-megapixel CMOS                                                                                                                                            | 5-megapixel CMOS                                                                                    | 2-megapixel CMOS                                                                                       |
| Power          | Power Input             | Cigarette lighter power cable, DC 9 V~30 V                                                                                                                  |                                                                                                     |                                                                                                        |
|                | Power Consumption       | 12V @ 1.25 A                                                                                                                                                | 12V @ 1.2A                                                                                          | 12 V @ 1.73 A                                                                                          |
| Reliability    | Mounting                | VESA 75                                                                                                                                                     | VESA 75                                                                                             | VESA 100                                                                                               |
|                | Operating Temperature   | -20°C ~ 60°C with air flow                                                                                                                                  | -10°C ~ 50°C with air flow                                                                          | -20°C ~ 60°C with air flow                                                                             |
|                | Weight (Net/Gross)      | 0.9 kg/2.1 kg                                                                                                                                               | 0.77 kg                                                                                             | 1.3 kg/2.8 kg                                                                                          |
|                | Safety/EMC              | CE/FCC/E-Mark/IP 54 compliant front panel                                                                                                                   | CE/FCC (Class A)/E-mak/IP54 front panel compliant                                                   | CE/FCC/E-Mark/IP 64 compliant front panel                                                              |
| OS             | Supported OS            | Microsoft® Windows Embedded 8, Microsoft® Windows Embedded Standard 7 E                                                                                     | Android 7.1                                                                                         | Microsoft® Windows Embedded 8, Microsoft® Windows Embedded Standard 7 E                                |



# Transportation System



| Model Name     |                         | IVS-300                                                                                                                                                                  | IVS-200-ULT2                                                                                                                                            | IVS-110-AL                                                                                                                                                                      |
|----------------|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Chassis        | Color                   | Blue C                                                                                                                                                                   | Blue C                                                                                                                                                  | Black                                                                                                                                                                           |
|                | Dimensions (WxDxH) (mm) | 255 x185 x80                                                                                                                                                             | 255 x 150 x 63                                                                                                                                          | 261 x 60 x 170                                                                                                                                                                  |
|                | System Fan              | Fanless                                                                                                                                                                  | Fanless                                                                                                                                                 | Fanless                                                                                                                                                                         |
|                | Chassis Construction    | Extruded aluminum alloy                                                                                                                                                  | Extruded aluminum alloy                                                                                                                                 | Extruded aluminum alloy                                                                                                                                                         |
| Motherboard    | CPU                     | Intel® Celeron® J1900 processor (quad-core 2GHz, 10W TDP) or Intel® Core™ i5-6300U processor (dual-core, 2.4 GHz, 15W TDP)                                               | Intel® Core™ i5-5350U processor (dual-core, 1.8 GHz, 15W TDP) or Intel® Celeron® 3765U processor (dual-core, 1.9 GHz, 15W TDP)                          | Intel® Atom™ x7 E3950 processor (quad-core, 2.0GHz, 12W TDP)                                                                                                                    |
|                | Chipset                 | SoC                                                                                                                                                                      | SoC                                                                                                                                                     | SoC                                                                                                                                                                             |
|                | System Memory           | IVS-300-BT:<br>2 x 204-pin DDR3L SO-DIMM.<br>4GB pre-installed (system max. 8 GB)<br>IVS-300-ULT3:<br>2 x 260-pin DDR4 SO-DIMM,<br>4GB pre-installed (system max. 32 GB) | 2 x 204-pin DDR3L SO-DIMM slot<br>4 GB Pre-installed (system max. 16 GB)                                                                                | 2 x 204-pin DDR3L SO-DIMM.<br>4GB pre-installed (system max. 8GB)                                                                                                               |
| Storage        | Hard Drive              | 2 x 2.5" SATA 6Gb/s HDD/SSD removable drive bay                                                                                                                          | 1 x 2.5" SATA 6Gb/s HDD/SSD removable drive bay                                                                                                         | 1 x 2.5" SATA 6Gb/s HDD/SSD drive bay                                                                                                                                           |
|                | SD Card                 | N/A                                                                                                                                                                      | N/A                                                                                                                                                     | N/A                                                                                                                                                                             |
|                | Flash                   | N/A                                                                                                                                                                      | N/A                                                                                                                                                     | 1 x eMMC 5.0 8GB (reserved)                                                                                                                                                     |
|                | mSATA                   | N/A                                                                                                                                                                      | 1 x mSATA (SATA 6Gb/s)                                                                                                                                  | 1 x mSATA (PCIe Mini Slot)<br>1 x eMMC 5.0 8G (reserved)                                                                                                                        |
| Communication  | WLAN                    | PCIe Mini Wi-Fi 802.11 a/b/g/n/ac (optional)                                                                                                                             | PCIe Mini Wi-Fi 802.11b/g/n (optional)                                                                                                                  | PCIe Mini Wi-Fi 802.11 a/b/g/n/ac (optional)                                                                                                                                    |
|                | Bluetooth               | BT 4.0/3.0+HS (combo with WLAN optional module)                                                                                                                          | Bluetooth 2.1 (combined with WWAN optional module)                                                                                                      | BT 4.0/3.0+HS (combo with WLAN optional module)                                                                                                                                 |
|                | WWAN                    | PCIe Mini WCDMA/HSDPA/HSUPA (optional)                                                                                                                                   | PCIe Mini WCDMA/HSDPA/HSUPA (optional)                                                                                                                  | PCIe Mini WCDMA/HSDPA/HSUPA (optional)                                                                                                                                          |
|                | RFID                    | N/A                                                                                                                                                                      | N/A                                                                                                                                                     | N/A                                                                                                                                                                             |
|                | GPS                     | On board GPS                                                                                                                                                             | N/A                                                                                                                                                     | On board GPS                                                                                                                                                                    |
| I/O Interfaces | USB 3.1 Gen 1           | 2                                                                                                                                                                        | 2                                                                                                                                                       | 4                                                                                                                                                                               |
|                | USB 2.0                 | N/A                                                                                                                                                                      | 2                                                                                                                                                       | N/A                                                                                                                                                                             |
|                | Ethernet                | 4 x RJ-45 PCIe GbE by Intel® i210-AT Support PoE IEEE802.3af (Each port max 15.4W)                                                                                       | 4 x RJ-45 connector<br>LAN1: PCIe GbE by Intel® I218<br>LAN2: PCIe GbE by Intel® I211<br>LAN3: PCIe GbE by Intel® I211<br>LAN4: PCIe GbE by Intel® I211 | 1 x RJ-45 PCIe GbE by Intel® I210-IT                                                                                                                                            |
|                | COM Port                | 2 x DB-9 RS-232<br>1 x DB-15 (with isolation) RS-422/485                                                                                                                 | 2 x DB-9 RS-232/422/485<br>4 x DB-9 RS-232 (optional)                                                                                                   | 1 x DB-9 RS-232/422/485 (BIOS configuration)                                                                                                                                    |
|                | Digital I/O             | (with isolation) 8-bit digital I/O (4-bit input / 4-bit output)                                                                                                          | 8-bit digital I/O (4-bit input / 4-bit output) (optional)                                                                                               | 1 x Printer port<br>16-bit digital I/O (8-bit input / 8-bit output)                                                                                                             |
|                | CAN-bus/OBD-II          | 1 x DB9 OBD-II/J1939                                                                                                                                                     | N/A                                                                                                                                                     | 1 x DB9 OBD-II/J1939                                                                                                                                                            |
|                | Display                 | 1 x VGA, 1 x HDMI                                                                                                                                                        | 1 x VGA, 1 x HDMI                                                                                                                                       | 1 x VGA, 1 x HDMI                                                                                                                                                               |
|                | Resolution              | VGA : Up to 1920 x 1080 @60 Hz<br>HDMI : Up to 1920 x 1080 @60 Hz                                                                                                        | VGA: up to 2560 x 1600 @60 Hz<br>HDMI: up to 3840 x 2160 @60 Hz                                                                                         | VGA : Up to 1920 x 1600 @60 Hz<br>HDMI : Up to 3840 x 2160 @30 Hz                                                                                                               |
|                | Audio                   | 1 x Line out, 1 x Mic in                                                                                                                                                 | 1 x Line out, 1 x Mic in                                                                                                                                | 1 x Line out                                                                                                                                                                    |
|                | SIM                     | 2 x on-board SIM card slot                                                                                                                                               | 1 x on-board SIM card slot                                                                                                                              | 2 x on-board SIM card slot                                                                                                                                                      |
|                | Antenna                 | 1 x 3G, 1 x GPS, 1 x BT, 1 x Wi-Fi                                                                                                                                       | 1 x 3G, 1 x BT, 1 x Wi-Fi                                                                                                                               | 1 x 3G, 1 x GPS, 1 x BT, 1 x Wi-Fi                                                                                                                                              |
|                | PCI                     | N/A                                                                                                                                                                      | N/A                                                                                                                                                     | N/A                                                                                                                                                                             |
| Expansions     | PCIe Mini               | 1 x Half-size PCIe Mini (reserved for WLAN)<br>1 x Full-size PCIe Mini (reserved for WWAN)<br>1 x Full-size PCIe Mini (USB signal)                                       | 1 x Full-size PCIe Mini (reserved for WWAN or mSATA)<br>1 x Half-size PCIe Mini (reserved for WLAN)                                                     | 1 x Full/Half-size PCIe Mini slot (reserved for WWAN)<br>1 x Full/Half-size PCIe Mini slot (reserved for mSATA or E-window)<br>1 x Half-size PCIe Mini slot (reserved for WLAN) |
|                | Power Input             | Cigarette lighter power cable : DC 9 V~30 V                                                                                                                              | DC jack : 9 V~36 V DC                                                                                                                                   | Cigarette lighter power cable : 9 V~ 36 V DC                                                                                                                                    |
| Power          | Power Consumption       | 12 V @ 14A (Intel® i5-6300U with 4 GB DDR4 memory + 4 PoE)                                                                                                               | 12 V @ 2.1 A (Intel® i5-5350U with 4 GB DDR3 memory)                                                                                                    | 12V @ 5A (Intel® Atom™ x7 E3950 with 8 GB DDR3 memory)                                                                                                                          |
|                | Mounting                | Wall mount                                                                                                                                                               | VESA 100                                                                                                                                                | Wall mount / VESA 100                                                                                                                                                           |
| Reliability    | Operating Temperature   | -20°C ~60°C with air flow                                                                                                                                                | -20°C ~ 60°C with air flow (SSD)                                                                                                                        | -30°C ~ 70°C with air flow                                                                                                                                                      |
|                | Weight (Net/Gross)      | 3 kg / 4.5 kg                                                                                                                                                            | 2.2 kg / 3 kg                                                                                                                                           | 2.4kg / 3.8kg                                                                                                                                                                   |
|                | Safety/EMC              | CE/FCC/E-Mark                                                                                                                                                            | CE/FCC/E-Mark                                                                                                                                           | CE/FCC/E-Mark/<br>IP rating : IP 4X compliant                                                                                                                                   |
| OS             | Supported OS            | Microsoft® Windows Embedded 8, Microsoft® Windows Embedded Standard 7 E                                                                                                  | Microsoft® Windows Embedded 8, Microsoft® Windows Embedded Standard 7 E                                                                                 | Microsoft® Windows 10 IoT Enterprise                                                                                                                                            |

# Transportation System



| Model Name     |                         | IRS-100-ULT3                                                                        | SBX-100-QM87                                                                                                              |
|----------------|-------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|
| Chassis        | Color                   | Blue C                                                                              | Black                                                                                                                     |
|                | Dimensions (WxDxH) (mm) | 290 x 225 x 69                                                                      | 290 x 225 x 75                                                                                                            |
|                | System Fan              | Fanless                                                                             | Fanless                                                                                                                   |
|                | Chassis Construction    | Extruded aluminum alloy                                                             | Extruded aluminum alloy                                                                                                   |
| Motherboard    | CPU                     | Intel® Core™ i5-6300U processor (dual-core, 2.4 GHz, 15W TDP)                       | Intel® mobile Core™ i5-4400E (2.7 GHz, 37W)                                                                               |
|                | Chipset                 | SoC                                                                                 | Intel® QM87                                                                                                               |
|                | System Memory           | 2 x 260-pin DDR4 SO-DIMM<br>4GB pre-installed (system max. 32 GB)                   | 2 x 204-pin DDR3 SO-DIMM slot (system max. 16 GB)<br>Pre-installed 4 GB DDR3 SO-DIMM                                      |
| IPMI           | IRIS Solution           | N/A                                                                                 | 1 x iRIS-2400                                                                                                             |
| Storage        | Hard Drive              | 2 x 2.5" SATA 6Gb/s HDD/SSD drive bay                                               | 2 x 2.5" SATA 6Gb/s SSD bay with RAID 0/1 function                                                                        |
|                | CFast/CF Card           | 1 x CFast                                                                           | 1 x CFast                                                                                                                 |
|                | Flash                   | N/A                                                                                 | N/A                                                                                                                       |
|                | mSATA                   | 1 x mSATA                                                                           | N/A                                                                                                                       |
| I/O Interfaces | PS/2 (KB/MS)            | N/A                                                                                 | 1                                                                                                                         |
|                | USB 3.1 Gen 1           | 2                                                                                   | 2                                                                                                                         |
|                | USB 2.0                 | 1 (M12 connector)                                                                   | 2                                                                                                                         |
|                | Ethernet                | 2 x M12 connector PCIe GbE by Intel® I211                                           | 2 x RJ-45 with teaming support<br>1 x PCIe GbE by Intel® I217LM<br>1 x PCIe GbE by Intel® I210-AT (2 with 2 kV isolation) |
|                | COM Port                | 2 x DB-9 RS-232/422/485 (with 1.5 kV isolation)                                     | 1 x DB-9 (non-isolated)<br>4 x RS-232/422/485 (with 2.5 kV isolation)                                                     |
|                | Digital I/O             | 1 x Terminal block 8-bit digital I/O (4-bit input / 4-bit output, 1.5 kV isolation) | N/A                                                                                                                       |
|                | CAN-bus/OBD-II          | N/A                                                                                 | 2 x CAN-bus (with 2.5 kV isolation)                                                                                       |
|                | Display                 | 1 x VGA, 1 x DVI-D                                                                  | 1 x VGA, 1 x DVI-D, 1 x HDMI                                                                                              |
|                | Resolution              | VGA : Up to 1920 x 1200 @60Hz<br>DVI-D : Up to 1920 x 1200 @60Hz                    | VGA: Up to 1920 x 1200 @ 60 Hz<br>HDMI: Up to 2500 x 1600 @ 60 Hz<br>DVI-D: Up to 2500 x 1600 @ 60 Hz                     |
|                | Audio                   | 1 x Line-out, 1 x Mic-in                                                            | 1 x Line-out, 1 x Line-in, 1 x Mic-in                                                                                     |
|                | TPM                     | N/A                                                                                 | N/A                                                                                                                       |
|                | SIM                     | 2 x SIM card slot                                                                   | N/A                                                                                                                       |
|                | Antenna                 | 1 x 3G, 1 x BT, 2 x Wi-Fi                                                           | 2 x Antenna SMA hole (reserved)                                                                                           |
| Expansions     | PCIe Mini               | 2 x Full-size PCIe Mini (for WWAN / WLAN module)                                    | 2 x Full size                                                                                                             |
| Power          | Power Input             | M12 connector:<br>Typical: 24V / 110V DC input                                      | Terminal block: Isolated 24V DC (18~31.2 V DC)                                                                            |
|                | Power Consumption       | 24V @ 2A<br>(Intel® i5-6300U with 4 GB DDR4 memory)                                 | 100 W<br>(Intel® mobile Core™ i5-4400E with 4 GB DDR3 memory)                                                             |
| Reliability    | Mounting                | Wall mount                                                                          | Wall mount                                                                                                                |
|                | Operating Temperature   | -40°C ~ 70°C with air flow (with industrial SSD/CF), compliant with EN 50155        | *-15°C ~ 55°C (5°F ~ 131°F) with air flow (SSD)                                                                           |
|                | Weight (Net/Gross)      | 3.9 kg / 5.1 kg                                                                     | 4.08 kg / 6.03 kg                                                                                                         |
|                | Safety/EMC              | CE/FCC<br>Compliance with EN50155, EN50121                                          | EMC/CE/FCC/DNV, IEC 60945 4th, IACS-E10, IEC 61174 compliant<br>IP rating: IP22 compliant rear cover                      |
| OS             | Supported OS            | Microsoft® Windows® Embedded 8,<br>Microsoft® Windows® Embedded Standard 7 E        | Microsoft® Windows® Embedded 8,<br>Microsoft® Windows® Embedded Standard 7 E                                              |

# IKARPC-07A

Vehicle Computer Series

## Features

- 7" sunlight readable TFT LCD with projected capacitive touchscreen
- Optional HSUPA/GPRS/GSM, Wi-Fi and Bluetooth
- Built-in GPS receiver
- Built-in OBD-II/J1939



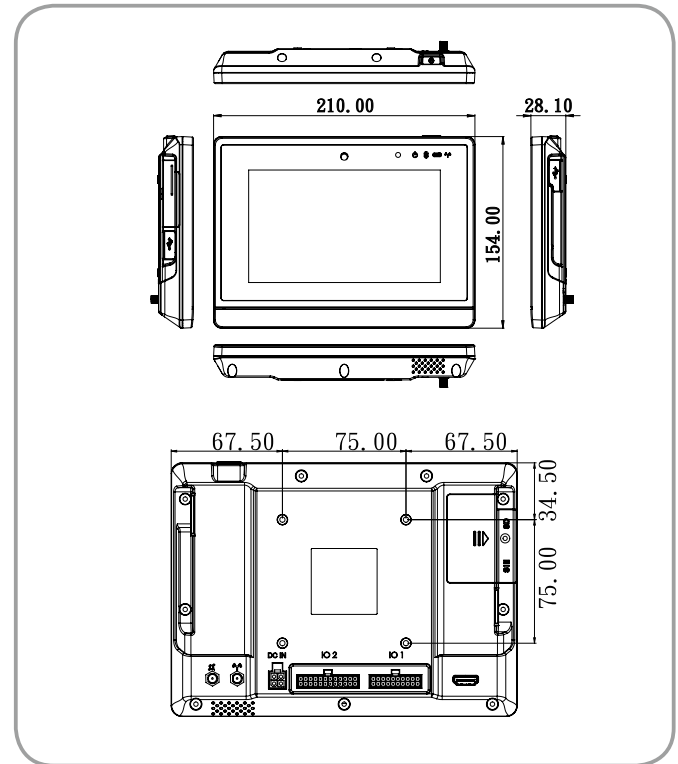
## Specifications

| Model Name             |                         | IKARPC-07A-BT                                                                                                                                                     |
|------------------------|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Chassis                | Color                   | Black C + Silver                                                                                                                                                  |
|                        | Dimensions (WxHxD) (mm) | 210 x 154 x 28                                                                                                                                                    |
|                        | System Fan              | Fanless                                                                                                                                                           |
|                        | Chassis Construction    | PC + ABS plastic                                                                                                                                                  |
| Display                | Size                    | 7"                                                                                                                                                                |
|                        | Resolution              | 1024 × 3 (RGB) × 600                                                                                                                                              |
|                        | Brightness (cd/m²)      | 500                                                                                                                                                               |
|                        | Contrast Ratio          | 700:1                                                                                                                                                             |
|                        | Pixel Pitch (mm)        | 0.05 (W) × 0.15 (H)                                                                                                                                               |
|                        | Viewing Angle (H/V)     | 130° (H) / 140° (V)                                                                                                                                               |
|                        | Touchscreen             | Projected capacitive touch with USB interface                                                                                                                     |
| Motherboard            | CPU                     | Intel® Atom™ processor E3826 (dual-core, 1.46 GHz, 7W)                                                                                                            |
|                        | Chipset                 | SoC                                                                                                                                                               |
|                        | System Memory           | On-board 2 GB SDRAM                                                                                                                                               |
| Storage                | SD Card                 | 1 x Micro SD slot (supports SD 2.0, max. 32 GB)                                                                                                                   |
|                        | Flash                   | N/A                                                                                                                                                               |
|                        | mSATA                   | 1 x mSATA (SATA 3Gb/s) optional                                                                                                                                   |
| Communication          | WLAN                    | PCIe Mini Wi-Fi 802.11a/b/g/n/ac (optional)                                                                                                                       |
|                        | Bluetooth               | BT 4.0/3.0+HS (combo with WLAN optional module)                                                                                                                   |
|                        | WWAN                    | PCIe Mini WCDMA/HSDPA/HSUPA (optional)                                                                                                                            |
|                        | RFID                    | N/A                                                                                                                                                               |
|                        | GPS                     | On board GPS                                                                                                                                                      |
| I/O Interfaces         | 20-pin Connector        | 1 x GbE LAN<br>1 x OBD-II/J1939<br>1 x USB 2.0                                                                                                                    |
|                        | 24-pin Connector        | 1 x Audio line-out (R+L)<br>1 x Audio line-in<br>1 x RS-232<br>4-bit digital I/O (2-bit input, 2-bit output)                                                      |
|                        | 8-pin Connector         | N/A                                                                                                                                                               |
|                        | USB 3.1 Gen 1           | 1                                                                                                                                                                 |
|                        | USB 2.0                 | 1                                                                                                                                                                 |
|                        | Display                 | 1 x HDMI                                                                                                                                                          |
|                        | SIM                     | 2 x on board SIM card slot                                                                                                                                        |
|                        | Antenna                 | 1 x GPS, 1 x WWAN                                                                                                                                                 |
|                        | PCIe Mini               | 1 x Full-size PCIe Mini (reserved for mSATA module),<br>1 x Full-size PCIe Mini (reserved for WWAN module),<br>1 x Half-size PCIe Mini (reserved for WLAN module) |
| Multimedia             | Speaker                 | 1 x Speaker (2 W)                                                                                                                                                 |
|                        | Camera                  | 2-megapixel CMOS                                                                                                                                                  |
| LED Indicator & Button | Indicator               | Power/HDD/Wi-Fi/3G                                                                                                                                                |
|                        | Button                  | 1 x Power button                                                                                                                                                  |
| Power                  | Power Input             | Cigarette lighter power cable, DC 9 V~30 V                                                                                                                        |
|                        | Consumption             | 12V @ 1.25 A                                                                                                                                                      |
| Reliability            | Mounting                | VESA 75                                                                                                                                                           |
|                        | Operating Temperature   | -20°C ~ 60°C with air flow                                                                                                                                        |
|                        | Storage Temperature     | -30°C ~ 70°C                                                                                                                                                      |
|                        | Humidity                | 10% ~ 95%, non-condensing                                                                                                                                         |
|                        | Operating Shock         | Half-sine wave shock 5G, 11ms, 3 shocks per axis                                                                                                                  |
|                        | Operating Vibration     | MIL-STD-810F 514.5C-2 (with SSD)                                                                                                                                  |
|                        | Weight (Net/Gross)      | 0.9 kg/2.1 kg                                                                                                                                                     |
| OS                     | Safety/EMC              | CE/FCC/E-Mark/IP 54 compliant front panel                                                                                                                         |
|                        | Supported OS            | Microsoft® Windows® Embedded 8,<br>Microsoft® Windows® Embedded Standard 7 E                                                                                      |



## Fully Integrated I/O

## Dimensions (Unit: mm)



## Ordering Information

| Part No.                | Description                                                                                                                                         |
|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| IKARPC-07A-BT-E3/2G-R11 | 7" 500 cd/m2 1024 x 600 In Vehicle Panel PC with Intel® Atom E3826 1.46GHz, 7W TDP, 2GB DDR3L on board memory, OBDII, GPS on board, 2M Camera, ROHS |

## Options

| Item                          | Part No.            | Description                                                                                                                                                                      |
|-------------------------------|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Power adapter                 | IVIPOWER-4PIN-R10   | Power adapter with 4-pin transfer cable, RoHS                                                                                                                                    |
| Cigarette lighter power cable | 32002-004000-100-RS | Round cable, power cable, car cigarette lighter cable, 2000 mm, 18 AWG, (A) cigarette lighter (5 A 250 V)+ $\psi$ 3 green LED, (B) MOLEX 5557-0400 P=4.2, SHANGHAI YING YU, RoHS |
| VESA mount stand              | IVI-MK03-R10        | 138mm 75x75 VESA mount stand                                                                                                                                                     |
| OBD-II cable                  | 32025-003400-100-RS | Round cable, OBD-II cable, 2000 mm, 24 AWG, (A) OBD-II 16P male, (B) D-sub 9P female, one piece package with label, NIAN YEONG, RoHS                                             |

## IKARPC-07A-BT Series

| Item                             | Part No.                | Description                                                                                                                                                                                                                 |
|----------------------------------|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| I/O connector 1 cable (20-pin)   | 32024-003000-100-RS     | Round cable, integration cable, I/O cable, 300 mm, 24 AWG (A)terminal block 3P P=5.08, (B)USB A type female+2 NUT, (C)PCB jack: RJ-45 8P8C, (D)D-sub 9P male, (E)MOLEX 5557-2000 P=3.0, one piece package with label, RoHS  |
| I/O connector 2 cable (24-pin)   | 32124-003700-100-RS     | Round cable, integration cable, I/O cable, 300 mm, 22 AWG, (A)terminal block 8P P=5.08, (B)MOLEX 43025-2400 P=3.0, (C)D-sub 9P male, (D)phone jack 3.5_3P+NUT, (E)phone jack 3.5_5P+NUT, one piece package with label, RoHS |
| OS: Windows Embedded 7 (DVD-ROM) | IKARPC-07A-BT-WES7P-R10 | OS image with Windows® Embedded Standard 7 E for IKARPC-07A-BT Series, DVD-ROM, RoHS                                                                                                                                        |
| OS: Windows Embedded 8 (DVD-ROM) | IKARPC-07A-WE8S-R10     | OS image with Windows® Embedded Standard 8 E for IKARPC-07A-BT Series, WE8S license label, DVD-ROM, RoHS                                                                                                                    |
| Wireless kit                     | IKARPC-WIFI-KIT01-R10   | 1T1R wifi module kit for embedded system, IEEE 802.11b/g/n, 1 x wifi module, RoHS                                                                                                                                           |
| WWAN kit                         | IKARPC-3G-KIT02-R10     | F260 3.75G module kit for embedded system, with BT V2.1, RoHS                                                                                                                                                               |

## Packing List

| Product       | Item            | Part No.            | Qty | Description                                                                                                                                                   |
|---------------|-----------------|---------------------|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| IKARPC-07A-BT | Power Cable     | 32002-001900-100-RS | 1   | Round cable, power cable, 3000mm, RoHS                                                                                                                        |
|               | Screw pack      | 44045-020031-RS     | 2   | Screw pack                                                                                                                                                    |
|               | GPS/GSM Antenna | 32506-000100-100-RS | 1   | Integration antenna, GPS/GSM, RG 174, 5000mm/5000mm, PPF-5423SA5X-999, Magnetic mount: $\phi$ 55x22mm, 1575.42MHz/850MHz/900MHz/1800MHz/1900MHz, SMA plug x 2 |

## AFOKAR-08A-RK39

Vehicle Computer Series

**New***Features*

- 8" sunlight readable TFT LCD with projected capacitive touchscreen
- Optional LTE module
- Built-in GPS receiver
- Built-in OBD-II/J1939
- OS: Android 7.1

*Specifications*

| Model Name             |                         | AFOKAR-08A-RK39                                                                             |
|------------------------|-------------------------|---------------------------------------------------------------------------------------------|
| Chassis                | Color                   | Black C + Silver                                                                            |
|                        | Dimensions (WxHxD) (mm) | 210 x 154 x 33.9                                                                            |
|                        | System Fan              | Fanless                                                                                     |
|                        | Chassis Construction    | PC + ABS plastic front, Metal rear                                                          |
| Display                | Size                    | 8"                                                                                          |
|                        | Resolution              | 800(RGB) × 1280                                                                             |
|                        | Brightness (cd/m²)      | 500 cd/m² (typ.)                                                                            |
|                        | Contrast Ratio          | 800 : 1 (typ.)                                                                              |
|                        | Pixel Pitch (mm)        | 0.13455(H) × 0.13455(V)                                                                     |
|                        | Viewing Angle (H/V)     | 85/85/85/85 Deg.                                                                            |
|                        | Touchscreen             | Projected capacitive with AG coating                                                        |
| Motherboard            | CPU                     | Rockchip RK3399 (Dual-core Cortex-A72 up to 1.8GHz + Quad-core Cortex-A53 up to 1.5GHz)     |
|                        | System Memory           | 2GB LPDDR3-1866                                                                             |
| Storage                | SD Card                 | 1 x Micro SD slot                                                                           |
|                        | Flash                   | 16GB eMMC NAND FLASH                                                                        |
| Communication          | WLAN                    | 802.11 a/b/g/n/ac                                                                           |
|                        | Bluetooth               | Bluetooth V4.1                                                                              |
|                        | WWAN                    | PCIe Mini LTE (optional)                                                                    |
|                        | RFID                    | 13.56 MHz ISO4443 A/B, read-write capable, ISO 14443A (MIFARE), ISO 14443B (FeliCa)         |
|                        | GPS                     | On board GPS                                                                                |
|                        | 20-pin Connector        | ** 1 x OBD-II/J1939<br>** 1 x USB 2.0                                                       |
| I/O Interfaces         | 24-pin Connector        | ** 1 x Audio out<br>** 1 x RS-232<br>** 1 x RS-485                                          |
|                        | USB 3.1 Gen 1           | ** 4-bit digital I/O with isolation (2-bit input, 2-bit output)<br>1 x USB 3.1 Gen 1 Type A |
|                        | Display                 | 1 x HDMI output                                                                             |
|                        | SIM                     | 1 x on board SIM card slot                                                                  |
|                        | Antenna                 | 1 x GPS, 1 x WWAN                                                                           |
|                        | Expansions              | 1 x Full-size PCIe Mini (reserved for WWAN)                                                 |
| Multimedia             | Speaker                 | 1 x Speaker (2 W)                                                                           |
|                        | Camera                  | 5-megapixel CMOS                                                                            |
| LED Indicator & Button | Indicator               | Power/BT/Wi-Fi/WWAN                                                                         |
|                        | Button                  | 1 x Power button                                                                            |
| Power                  | Power Input             | DC 9 V~30 V, 4 pin connector (with ACC Ignition)                                            |
|                        | Power Consumption       | 12V @ 1.2A                                                                                  |
| Reliability            | Mounting                | VESA Mount 75mm x 75mm                                                                      |
|                        | Operating Temperature   | -10°C ~ 50°C with air flow                                                                  |
|                        | Storage Temperature     | -20°C ~ 60°C                                                                                |
|                        | Humidity                | 10% ~ 90%, non-condensing                                                                   |
|                        | Operating Shock         | Half-sine wave shock 5G, 11ms, 3 shocks per axis                                            |
|                        | Operating Vibration     | MIL-STD-810F 514.5C-2                                                                       |
|                        | Weight (Net)            | 0.77 kg                                                                                     |
|                        | Safety/EMC              | CE/FCC (Class A)/E-mak/IP54 front panel compliant                                           |
| OS                     | Supported OS            | Android 7.1                                                                                 |
|                        | Watch dog timer         | Yes                                                                                         |



| Part No.               | Description                                                                                                                                                          |
|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| AFOKAR-08A-RK39-R10-TW | 8" 500 cd/m², Android 7.1 In Vehicle Panel PC with Rockchip 3399 Processor, 2GB LPDDR3 , 16GB eMMC Flash, GPS, WIFI/BT, OBD II, 5M Camera, RFID Reader, TW reg, ROHS |
| AFOKAR-08A-RK39-R10-CN | 8" 500 cd/m², Android 7.1 In Vehicle Panel PC with Rockchip 3399 Processor, 2GB LPDDR3 , 16GB eMMC Flash, GPS, WIFI/BT, OBD II, 5M Camera, RFID Reader, CN reg, ROHS |
| AFOKAR-08A-RK39-R10-US | 8" 500 cd/m², Android 7.1 In Vehicle Panel PC with Rockchip 3399 Processor, 2GB LPDDR3 , 16GB eMMC Flash, GPS, WIFI/BT, OBD II, 5M Camera, RFID Reader, US reg, ROHS |
| AFOKAR-08A-RK39-R10-EU | 8" 500 cd/m², Android 7.1 In Vehicle Panel PC with Rockchip 3399 Processor, 2GB LPDDR3 , 16GB eMMC Flash, GPS, WIFI/BT, OBD II, 5M Camera, RFID Reader, EU reg, ROHS |

| Item                          | Part No.            | Description                                                                           |
|-------------------------------|---------------------|---------------------------------------------------------------------------------------|
| Power Adapter                 | IVIPOWER-4PIN-R10   | Adapter PowerWith 4 pins transfer cable, RoHS                                         |
| Cigarette Lighter Power Cable | 32002-004000-100-RS | CAR CIGARETTE LIGHTER CABLE                                                           |
| VESA Mount Stand              | IVI-MK03-R10        | 138mm 75x75 VESA mount stand                                                          |
| VESA Mount Stand              | IVI-MK04-R10        | 286mm 75x75 VESA mount stand                                                          |
| OBDII Cable                   | 32025-003400-100-RS | OBDII CABEL;2;2000MM;24AWG;(A)OBD2-16P MALE;(B)D-SUB 9PIN FEMALE                      |
| ACC Power Cable               | 32002-001900-100-RS | Vehicle battery to device power cable;3000MM;16AWG                                    |
| GPS/LTE Antenna               | 32506-000500-100-RS | Magnetic Antenna Base_GPS+GLOANSS & 3G/LTE 2 In 1 Antenna;RG 174;5000MM               |
| I/O Connector (20 pin)        | 32024-003800-100-RS | 1 x DB-9 for OBD-II/J1939, 1 x USB 2.0 TYPE A                                         |
| I/O Connector (24 pin)        | 32124-004400-100-RS | 1 x Audio line-out (R+L), 1 x RS-232, 1 x RS-485,1 x terminal block 4 bit digital I/O |
| LTE module                    | 27552-000004-RS     | WCDMA/HSPA+/LTE;SIM7500SA                                                             |
|                               | 27552-000005-RS     | GSM/LTE/WCDMA;SIM7500E                                                                |
|                               | 27552-000006-RS     | LTE/WCDMA;SIM7500A                                                                    |

1 x AFOKAR Device

# IKARPC-W10A

## Vehicle Computer Series

### Features

- 10.1" TFT LCD with projected capacitive touchscreen
- Intel® Atom™ E3826 1.46 GHz CPU
- Windows® Embedded Standard 7
- Option HSUPA/GPRS/GSM, Wi-Fi and Bluetooth
- Built-in GPS function
- Built-in OBD-II/J1939



### Specifications

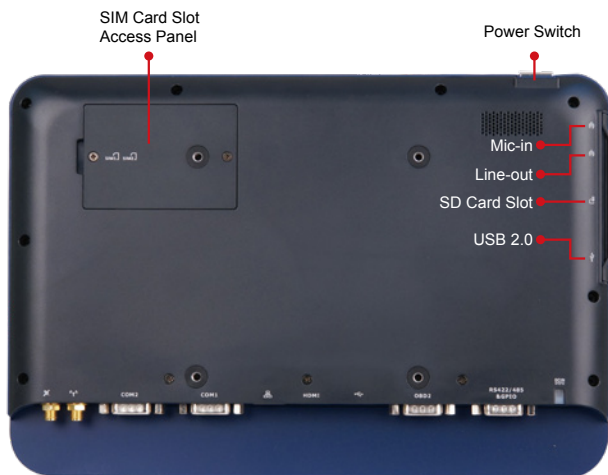
| Model Name             |                                 | IKARPC-W10A                                                                                               |
|------------------------|---------------------------------|-----------------------------------------------------------------------------------------------------------|
| Chassis                | Color                           | Blue C + Black C                                                                                          |
|                        | Dimensions (WxHxD) (mm)         | 277 x 186 x 27                                                                                            |
|                        | System Fan                      | Fanless                                                                                                   |
|                        | Chassis Construction            | PC + ABS plastic                                                                                          |
| Display                | Size                            | 10.1"                                                                                                     |
|                        | Resolution                      | 1280 x 800                                                                                                |
|                        | Brightness (cd/m <sup>2</sup> ) | 350                                                                                                       |
|                        | Contrast Ratio                  | 800:1                                                                                                     |
|                        | Pixel Pitch (mm)                | 0.0565 (W) × 0.1695 (H)                                                                                   |
|                        | Viewing Angle (H/V)             | 150° (H)/145° (V)                                                                                         |
|                        | Touchscreen                     | Projected capacitive touch with USB interface                                                             |
| Motherboard            | CPU                             | Intel® Atom™ processor E3826 (dual-core, 1.46 GHz, 7W)                                                    |
|                        | Chipset                         | SoC                                                                                                       |
|                        | System Memory                   | On-Board 2GB DDR3L 1 x 204-pin DDR3L SO-DIMM. (Max. 4GB)                                                  |
| Storage                | Hard Drive                      | 1 x 2.5" SATA 3Gb/s HDD/SSD drive bay                                                                     |
|                        | SD Card                         | 1 x SD slot (supports SD 2.0, max. 32 GB)                                                                 |
| Communication          | WLAN                            | PCIe Mini Wi-Fi 802.11a/b/g/n/ac (optional)                                                               |
|                        | Bluetooth                       | BT 4.0/3.0+HS (combo with WLAN optional module)                                                           |
|                        | WWAN                            | PCIe Mini WCDMA/HSDPA/HSUPA (optional)                                                                    |
|                        | GPS                             | On board GPS                                                                                              |
| I/O Interfaces         | USB 3.1 Gen 1                   | 1                                                                                                         |
|                        | USB 2.0                         | 1                                                                                                         |
|                        | Ethernet                        | 1 x RJ-45 PCIe GbE by Realtek 8111E                                                                       |
|                        | COM Port                        | 2 x DB-9 RS-232                                                                                           |
|                        | Digital I/O                     | 8-bit digital I/O (4-bit input / 4-bit output)                                                            |
|                        | CAN-bus/OBD-II                  | 1 x DB9 OBD-II/J1939                                                                                      |
|                        | Display                         | 1 x HDMI                                                                                                  |
|                        | Resolution                      | HDMI: Up to 1920 x 1080 @ 60 Hz                                                                           |
|                        | Audio                           | 1 x Line out, 1 x Mic in                                                                                  |
|                        | SIM                             | 2 x on board SIM card slot                                                                                |
|                        | Antenna                         | 1 x GPS, 1 x WWAN                                                                                         |
| Expansions             | PCIe Mini                       | 1 x Full-size PCIe Mini (reserved for WWAN module),<br>1 x Full-size PCIe Mini (reserved for WLAN module) |
|                        | Audio                           | 1 x Speaker (2 W)                                                                                         |
| Multimedia             | Camera                          | 2-megapixel CMOS                                                                                          |
|                        | Indicator                       | Power/Wi-Fi/HDD/3.5G                                                                                      |
| LED Indicator & Button | Button                          | 1 x Power button                                                                                          |
|                        | Power Input                     | Cigarette lighter power cable, DC 9 V~30 V                                                                |
| Power                  | Consumption                     | 12 V @ 1.73 A                                                                                             |
|                        | Mounting                        | VESA 100                                                                                                  |
| Reliability            | Operating Temperature           | -20°C ~ 60°C with air flow                                                                                |
|                        | Storage Temperature             | -30°C ~ 70°C                                                                                              |
|                        | Humidity                        | 10% ~ 95%, non-condensing                                                                                 |
|                        | Operating Shock                 | Half-sine wave shock 5G, 11ms, 3 shocks per axis                                                          |
|                        | Operating Vibration             | MIL-STD-810F 514.5C-2 (with SSD)                                                                          |
|                        | Weight (Net/Gross)              | 1.3 kg/2.8 kg                                                                                             |
|                        | Safety/EMC                      | CE/FCC/E-Mark/IP 64 compliant front panel                                                                 |
|                        | Supported OS                    | Microsoft® Windows® Embedded 8, Microsoft® Windows® Embedded Standard 7 E                                 |



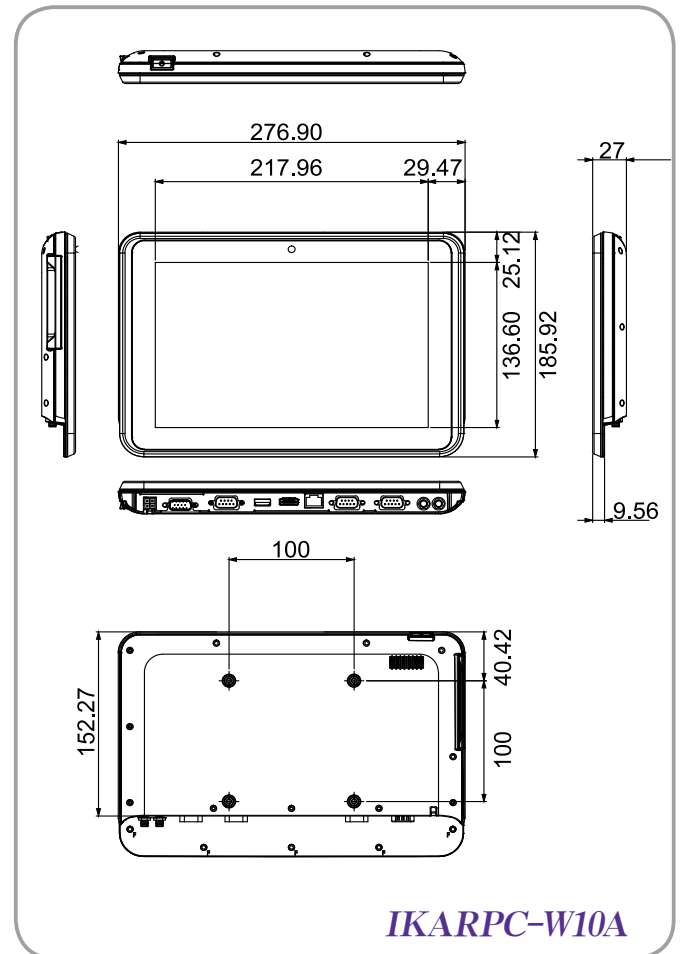
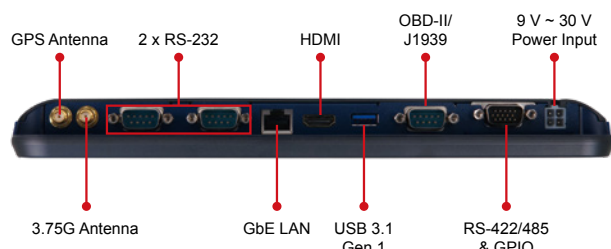
## Fully Integrated I/O

## Dimensions (Unit: mm)

## Rear view



## Bottom view



## Ordering Information

| Part No.                 | Description                                                                                                                                                       |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| IKARPC-W10A-BT-E3/2G-R10 | 10.1" 350 cd/m2 1280 x 800, in-vehicle panel PC with Intel® Atom E3826 1.46GHz, 7W TDP, 2GB DDR3L on-board memory, OBD-II, on-board GPS, 2-megapixel camera, RoHS |

## Options

| Item                             | Part No.                 | Description                                                                                                                                                           |
|----------------------------------|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Power adapter                    | IVIPOWER-4PIN-R10        | Power adapter with 4-pin transfer cable, RoHS                                                                                                                         |
| Cigarette lighter power cable    | 32002-004000-100-RS      | Round cable, power cable, car cigarette lighter cable, 2000 mm, 18 AWG, (A) cigarette lighter (5 A 250 V)+ $\varnothing$ 3 green LED, (B) MOLEX 5557-0400 P=4.2, RoHS |
| OBD-II cable                     | 32025-003400-100-RS      | Round cable, OBD-II cable, 2000 mm, 24 AWG, (A) OBD-II 16P male, (B) D-sub 9P female, one piece package with label, RoHS                                              |
| OS: Windows Embedded 7 (DVD-ROM) | IKARPC-W10A-BT-WES7P-R10 | OS image with Windows® Embedded Standard 7 E for IKARPC-W10A-BT Series, DVD-ROM, RoHS                                                                                 |
| OS: Windows Embedded 8 (DVD-ROM) | IKARPC-W10A-WE8S-R10     | OS image with Windows® Embedded Standard 8 E for IKARPC-W10A Series, WE8S license label, DVD-ROM, RoHS                                                                |
| Wireless kit                     | IKARPC-WIFI-KIT02-R10    | 1T1R wifi module kit for embedded system, IEEE802.11a/b/g/n/ac WiFi with Bluetooth 4.0/3.0+HS, 1 x wifi module, RoHS                                                  |
| WWAN kit                         | IKARPC-3G-KIT02-R10      | F260 3.75G module kit for embedded system, with BT V2.1, RoHS                                                                                                         |
| VESA mount stand                 | IVI-MK02-R10             | 286mm 75x75 / 100x100 VESA mount stand                                                                                                                                |

## Packing List

| Item                | Part No.            | Qty | Description                                                                                                                                                          |
|---------------------|---------------------|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Power Cable w/ core | 32002-001900-100-RS | 1   | Round cable, power cable, 3000mm, RoHS                                                                                                                               |
|                     | 30600-000056-RS     | 1   | Cable Core 13 $\varnothing$ , 33x31.5x33mm, RoHS                                                                                                                     |
| GPS/GSM Antenna     | 32506-000100-100-RS | 1   | Integration antenna, GPS/GSM, RG 174, 5000mm/5000mm, PPF-5423SA5X-999, Magnetic mount: $\varnothing$ 55x22mm, 1575.42MHz/850MHz/900MHz/1800MHz/1900MHz, SMA plug x 2 |

# IVS-300

## Vehicle Surveillance System

### Features

- Intel® Skylake ULT /Baytrail processor
- 4 x PoE IEEE802.3af
- Optional 3G/Wi-Fi
- 2 x RS-232, 1 x RS-422/485
- 4 x DI/DO
- 1 x HDMI (lockable), 1 x VGA

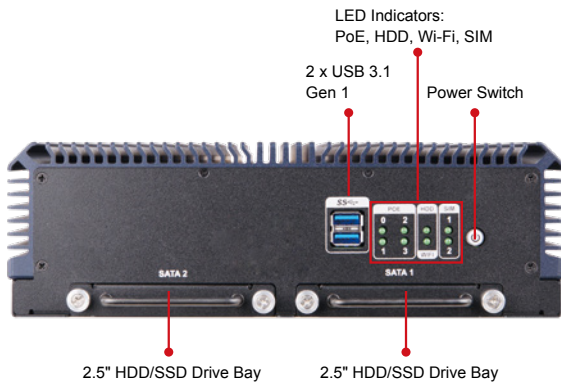


### Specifications

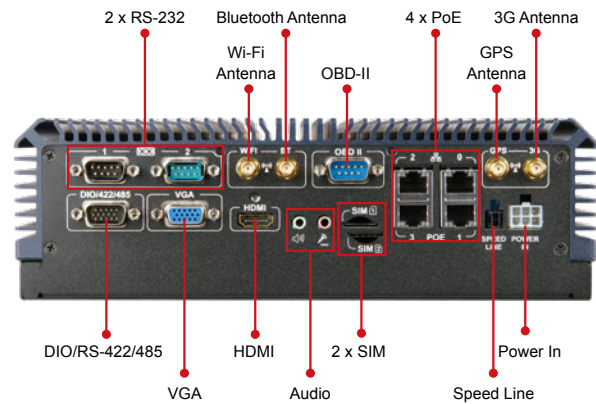
| Model Name             |                         | IVS-300-BT                                                                                                                         | IVS-300-ULT3                                                                                                                       |
|------------------------|-------------------------|------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| Chassis                | Color                   | Blue C                                                                                                                             | Blue C                                                                                                                             |
|                        | Dimensions (WxHxD) (mm) | 255 x 80 x 185                                                                                                                     | 255 x 80 x 185                                                                                                                     |
|                        | System Fan              | Fanless                                                                                                                            | Fanless                                                                                                                            |
|                        | Chassis Construction    | Extruded aluminum alloy                                                                                                            | Extruded aluminum alloy                                                                                                            |
| Motherboard            | CPU                     | Intel® Celeron® J1900 Processor (quad-core 2GHz, 10W TDP)                                                                          | Intel® Core™ i5-6300U processor (dual-core, 2.4 GHz, 15W TDP)                                                                      |
|                        | Chipset                 | SoC                                                                                                                                |                                                                                                                                    |
|                        | System Memory           | 2 x 204-pin DDR3L SO-DIMM, 4GB pre-installed (system max. 8 GB)                                                                    | 2 x 260-pin DDR4 SO-DIMM, 4GB pre-installed (system max. 32 GB)                                                                    |
| Storage                | Hard Drive              | 2 x 2.5" SATA 6Gb/s SSD removable drive bay                                                                                        | 2 x 2.5" SATA 6Gb/s SSD removable drive bay                                                                                        |
| Communication          | WLAN                    | PCIe Mini Wi-Fi 802.11 a/b/g/n/ac (optional)                                                                                       | PCIe Mini Wi-Fi 802.11 a/b/g/n/ac (optional)                                                                                       |
|                        | Bluetooth               | BT 4.0/3.0+HS (combo with WLAN optional module)                                                                                    | BT 4.0/3.0+HS (combo with WLAN optional module)                                                                                    |
|                        | WWAN                    | PCIe Mini WCDMA/HSDPA/HSUPA (optional)                                                                                             | PCIe Mini WCDMA/HSDPA/HSUPA (optional)                                                                                             |
|                        | GPS                     | On board GPS                                                                                                                       | On board GPS                                                                                                                       |
| I/O Interfaces         | USB 3.1 Gen 1           | 2                                                                                                                                  | 2                                                                                                                                  |
|                        | Ethernet                | 4 x RJ-45 PCIe GbE by Intel® i210-AT Support PoE IEEE802.3af (Each port max 15.4W)                                                 | 4 x RJ-45 PCIe GbE by Intel® i210-AT Support PoE IEEE802.3af (Each port max 15.4W)                                                 |
|                        | COM port                | 2 x DB-9 RS-232(With isolation)<br>1 x DB-15 RS-422/485                                                                            | 2 x DB-9 RS-232(With isolation)<br>1 x DB-15 RS-422/485                                                                            |
|                        | Digital I/O             | 8-bit digital I/O (4-bit input, 4-bit output)                                                                                      | 8-bit digital I/O (4-bit input, 4-bit output)                                                                                      |
|                        | CAN-Bus/OBD-II          | 1 x DB9 OBD-II/J1939                                                                                                               | 1 x DB9 OBD-II/J1939                                                                                                               |
|                        | Display                 | 1 x VGA, 1 x HDMI                                                                                                                  | 1 x VGA, 1 x HDMI                                                                                                                  |
|                        | Resolution              | VGA : Up to 1920 x 1080 @60Hz<br>HDMI : Up to 1920 x 1080 @60Hz                                                                    | VGA : Up to 1920 x 1080 @60Hz<br>HDMI : Up to 1920 x 1080 @60Hz                                                                    |
|                        | Audio                   | 1 x Mic in, 1 x Line out                                                                                                           | 1 x Mic in, 1 x Line out                                                                                                           |
|                        | SIM                     | 2 x on board SIM card slot                                                                                                         | 2 x on board SIM card slot                                                                                                         |
|                        | Antenna                 | 1 x 3G, 1 x GPS, 1 x BT, 1 x Wi-Fi                                                                                                 | 1 x 3G, 1 x GPS, 1 x BT, 1 x Wi-Fi                                                                                                 |
| Expansions             | PCIe Mini               | 1 x Half-size PCIe Mini (reserved for WLAN)<br>1 x Full-size PCIe Mini (reserved for WWAN)<br>1 x Full-size PCIe Mini (USB signal) | 1 x Half-size PCIe Mini (reserved for WLAN)<br>1 x Full-size PCIe Mini (reserved for WWAN)<br>1 x Full-size PCIe Mini (USB signal) |
| Led Indicator & Button | Indicator               | 8 x LED (4 PoE, 1 HDD, 1 Wi-Fi, 2 SIM)                                                                                             | 8 x LED (4 PoE, 1 HDD, 1 Wi-Fi, 2 SIM)                                                                                             |
|                        | Button                  | 1 x Power button                                                                                                                   | 1 x Power button                                                                                                                   |
| Power                  | Power Input             | Cigarette lighter power cable: DC 9 V~30 V                                                                                         | Cigarette lighter power cable: DC 9 V~30 V                                                                                         |
|                        | Consumption             | 12 V @ 12A<br>(Intel® J1900 with 4 GB DDR3L memory + 4 PoE)                                                                        | 12 V @ 14A<br>(Intel® i5-6300U with 4 GB DDR4 memory + 4 PoE)                                                                      |
| Reliability            | Mounting                | Wall mount                                                                                                                         | Wall mount                                                                                                                         |
|                        | Operating Temperature   | -20°C ~ 60°C with air flow                                                                                                         | -20°C ~ 60°C with air flow                                                                                                         |
|                        | Storage Temperature     | -30°C ~ 70°C                                                                                                                       | -30°C ~ 70°C                                                                                                                       |
|                        | Humidity                | 10% ~ 95%, non-condensing                                                                                                          | 10% ~ 95%, non-condensing                                                                                                          |
|                        | Operating Shock         | Half-sine wave shock 5G, 11ms, 3 shocks per axis                                                                                   | Half-sine wave shock 5G, 11ms, 3 shocks per axis                                                                                   |
|                        | Operating Vibration     | MIL-STD-810F 514.5C-2 (with SSD)                                                                                                   | MIL-STD-810F 514.5C-2 (with SSD)                                                                                                   |
|                        | Weight (Net/Gross)      | 3kg/4.5kg                                                                                                                          | 3kg/4.5kg                                                                                                                          |
|                        | Safety/EM C             | CE / FCC / E-Mark                                                                                                                  | CE / FCC / E-Mark                                                                                                                  |
| OS                     | Supported OS            | Microsoft® Windows® Embedded 8, Microsoft® Windows® Embedded Standard 7 E                                                          | Microsoft® Windows® Embedded 8, Microsoft® Windows® Embedded Standard 7 E                                                          |

## Fully Integrated I/O

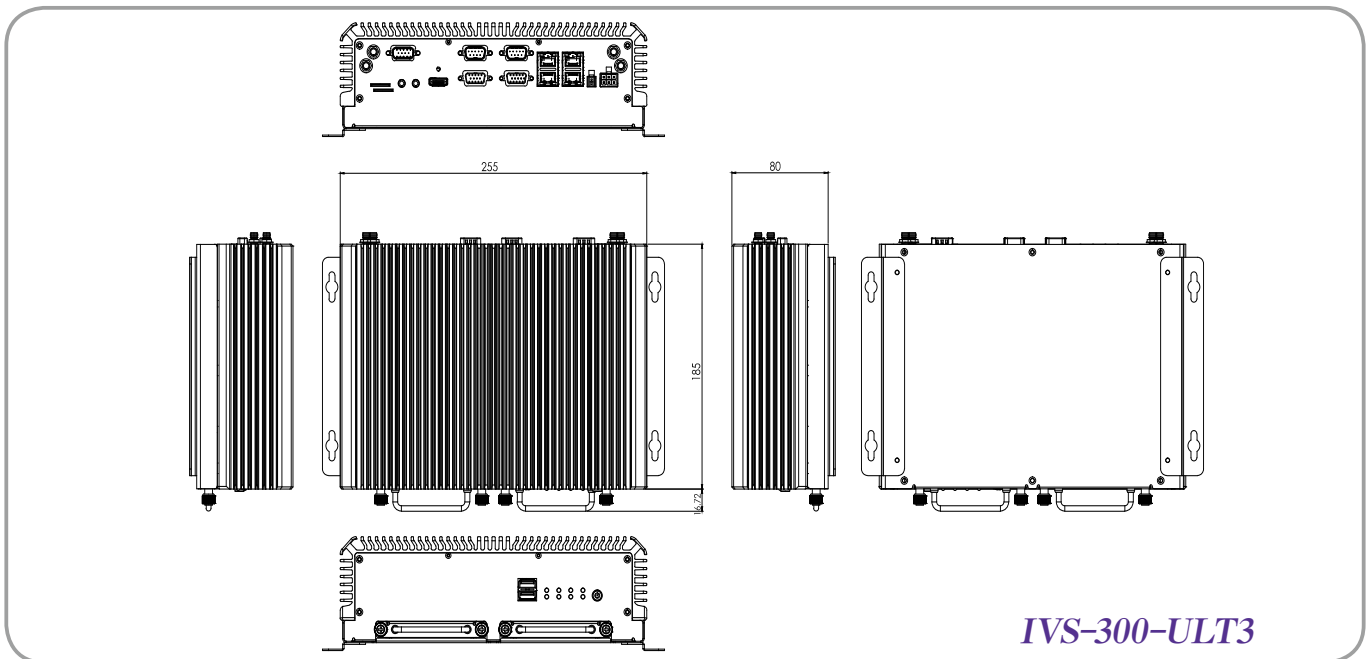
Front view



Rear view



## Dimensions (Unit: mm)



## Ordering Information

| Part No.               | Description                                                                                                                                                                                                 |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| IVS-300-BT-J1/4G-R10   | Fanless embedded system with Intel® Celeron® Processor J1900 (10W) Processor with 4GB DDR3L pre-installed memory, PoE, on board GPS, HDMI, VGA, two 2.5" removable SATA HDD bay, RoHS                       |
| IVS-300-ULT3-i5/4G-R10 | Fanless embedded system with 6th generation 14nm Intel® Core™ i5-6300U (15W) mobile processor (ULT) with 4GB DDR4 pre-installed memory, PoE, on-board GPS, HDMI, VGA, two 2.5" removable SATA HDD bay, RoHS |

## Options

| Part No.                 | Description                                                                                                                          |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| IVS-300-ULT3-WES7E64-R10 | OS Image with Windows® Embedded Standard 7 E 64-bit for IVS-300-ULT3, with DVD-ROM, RoHS                                             |
| IVS-300-BT-WES7E64-R10   | OS Image with Windows® Embedded Standard 7 E 64-bit for IVS-300-BT, with DVD-ROM, RoHS                                               |
| IVS-WIFI-KIT02-R10       | 1T1R Wi-Fi module kit for embedded system, IEEE802.11a/b/g/n/ac Wi-Fi with Bluetooth 4.0/3.0+HS, 1 x Wi-Fi module, 1 x Antenna, RoHS |
| IVS-3G-KIT02-R10         | 3G module kit for embedded system, F260, 1 x 3G module, RoHS                                                                         |
| IVIPOWER-6PIN-R10        | Power adapter with 6-pin transfer cable, RoHS                                                                                        |

## Packing List

| Item            | Part No.            | Qty | Description                                                                                                                                             |
|-----------------|---------------------|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| Wall Mount Kit  | 41020-0432C2-00-RS  | 2   | Wall mount bracket                                                                                                                                      |
| Power Cable     | 32002-007200-101-RS | 1   | Round cable, power cable, 1, 3000mm, 18AWG, (A) MOLEX 5557-0600 P=4.2, H.S.TUBE x 2, Label: GND x 3 + VIN x 2 + ACC, RoHS                               |
| GPS/GSM Antenna | 32506-000100-100-RS | 1   | Integration antenna, GPS/GSM, RG 174, 5000mm/5000mm, PPF-5423SA5X-999, Magnetic mount: φ55x22mm, 1575.42MHz/850MHz/900MHz/1800MHz/1900MHz, SMA plug x 2 |
| Screw pack      | 44015-030053-RS     | 8   | Screw pack                                                                                                                                              |
|                 | 44005-030061-RS     | 6   | Screw pack                                                                                                                                              |

# IVS-200-ULT2

## Vehicle Surveillance System

### Features

- Intel® i5-5350U dual-core 1.8 GHz CPU or Intel® Celeron® 3755U dual-core 1.7 GHz CPU
- Four Intel® GbE LAN ports
- 9 V~36 V DC input
- Two RS-232/422/485
- E-Mark certification



### Specifications

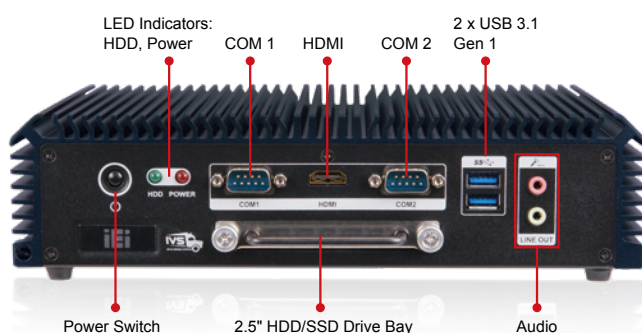
| Model Name     |                         | IVS-200-ULT2                                                                                                                                            |
|----------------|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| Chassis        | Color                   | Blue C                                                                                                                                                  |
|                | Dimensions (WxHxD) (mm) | 255 x 63 x 150                                                                                                                                          |
|                | System Fan              | Fanless                                                                                                                                                 |
|                | Chassis Construction    | Extruded aluminum alloy                                                                                                                                 |
| Motherboard    | CPU                     | Intel® Core™ i5-5350U Processor (dual-core, 1.8 GHz, 15W TDP) or Intel® Celeron® 3755U Processor (dual-core, 1.9 GHz, 15W TDP)                          |
|                | Chipset                 | SoC                                                                                                                                                     |
|                | System Memory           | 2 x 204-pin DDR3L SO-DIMM slot<br>4 GB Pre-installed (system max. 16 GB)                                                                                |
| Storage        | Hard Drive              | 1 x 2.5" SATA 6Gb/s HDD/SSD removable drive bay                                                                                                         |
|                | mSATA                   | 1 x mSATA (SATA 6Gb/s)                                                                                                                                  |
| Communication  | WLAN                    | PCIe Mini Wi-Fi 802.11b/g/n (optional)                                                                                                                  |
|                | Bluetooth               | Bluetooth 2.1 (combined with WWAN optional module)                                                                                                      |
|                | WWAN                    | PCIe Mini WCDMA/HSDPA/HSUPA (optional)                                                                                                                  |
| I/O Interfaces | USB 3.1 Gen 1           | 2                                                                                                                                                       |
|                | USB 2.0                 | 2                                                                                                                                                       |
|                | Ethernet                | 4 x RJ-45 connector<br>LAN1: PCIe GbE by Intel® I218<br>LAN2: PCIe GbE by Intel® I211<br>LAN3: PCIe GbE by Intel® I211<br>LAN4: PCIe GbE by Intel® I211 |
|                | COM Port                | 2 x DB-9 RS-232/422/485<br>4 x DB-9 RS-232 (optional)                                                                                                   |
|                | Display                 | 1 x VGA, 1 x HDMI                                                                                                                                       |
|                | Resolution              | VGA: up to 2560 x 1600 @ 60 Hz<br>HDMI: up to 3840 x 2160 @ 60 Hz                                                                                       |
|                | DIO                     | 8 bit digital I/O (4-bit input, 4-bit output) (optional)                                                                                                |
|                | SIM                     | 1 x on board SIM card slot                                                                                                                              |
|                | Antenna                 | 1 x 3G, 1 x BT, 1 x Wi-Fi                                                                                                                               |
|                | Audio                   | 1 x Line out, 1 x Mic in                                                                                                                                |
| Expansions     | PCIe Mini               | 1 x Full-size PCIe Mini (reserved for WWAN or mSATA)*<br>1 x Full-size PCIe Mini (reserved for WLAN)                                                    |
|                | Power Input             | DC jack : 9 V~36 V DC                                                                                                                                   |
| Power          | Consumption             | 12 V @ 2.1 A (Intel® i5-5350U with 4 GB DDR3 memory)                                                                                                    |
| Reliability    | Mounting                | VESA 100                                                                                                                                                |
|                | Operating Temperature   | -20°C ~ 60°C with air flow (SSD)                                                                                                                        |
|                | Storage Temperature     | -30°C ~ 70°C                                                                                                                                            |
|                | Humidity                | 10% ~ 95%, non-condensing                                                                                                                               |
|                | Operating Shock         | Half-sine wave shock 5G, 11ms, 3 shocks per axis                                                                                                        |
|                | Operating Vibration     | MIL-STD-810F 514.5C-2 (with SSD)                                                                                                                        |
|                | Weight (Net/Gross)      | 2.2 kg/3 kg                                                                                                                                             |
|                | Safety/EMC              | CE/FCC/E-Mark                                                                                                                                           |
| OS             | Supported OS            | Microsoft® Windows® Embedded 8, Microsoft® Windows® Embedded Standard 7 E                                                                               |

\*IVS-200-ULT2-QGW-R10 has only one PCIe mini slot(Full size)

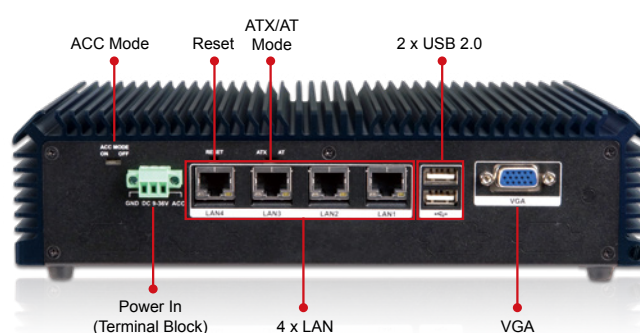


## Fully Integrated I/O

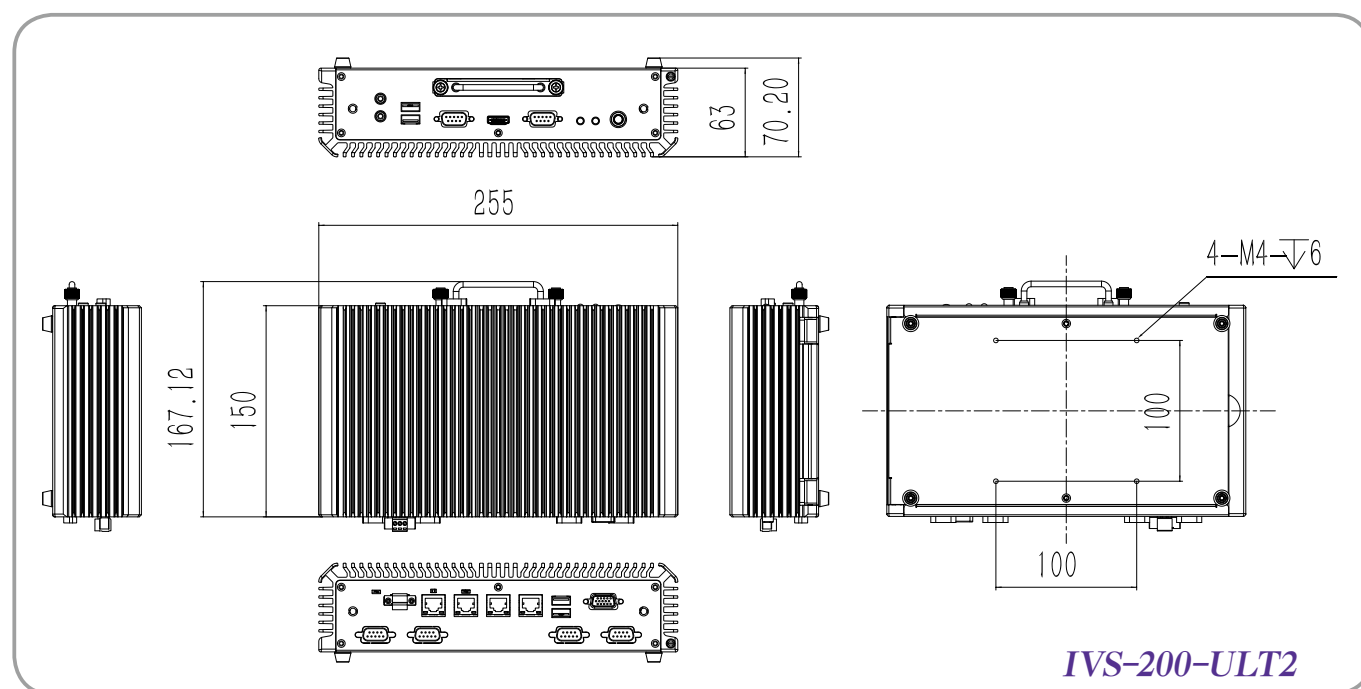
Front view



Rear view



## Dimensions (Unit: mm)



## Ordering Information

| Part No.               | Description                                                                                                                                                                                                          |
|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| IVS-200-ULT2-I5/4G-R10 | Fanless system with Intel® Core™ i5-5350U CPU, up to 2.9GHz, TDP 15W, four GbE LAN ports, one HDMI, one VGA, two RS-232/422/485, one 2.5" removable SATA HDD bay, 4 GB memory pre-installed, 9 V~36 V DC, R10, RoHS  |
| IVS-200-ULT2-C/4G-R10  | Fanless system with Intel® Celeron® 3765U 1.7GHz CPU, TDP 15W, four GbE LAN ports, one HDMI, one VGA, two RS-232/422/485, one 2.5" removable SATA HDD bay, 4 GB memory pre-installed, 9 V~36 V DC, R10, RoHS         |
| IVS-200-ULT2-QGW-R10   | Fanless System with Intel® Core™ i5-5350U up to 2.9GHz, TDP 15W, 4 x GbE LAN port, 1 x HDMI, 1 x VGA, 2 x RS-232/422/485, 1 x 2.5" removable SATA HDD bay, 8G memory pre-installed, with QTS-Gateway, 9~36V DC, RoHS |

## Options

| Item         | Part No.                 | Description                                                                         |
|--------------|--------------------------|-------------------------------------------------------------------------------------|
| OS           | IVS-200-ULT2-WESTE64-R10 | OS Image with Windows® Embedded Standard 7 E 64-bit for IVS-200-ULT2, DVD-ROM, RoHS |
| Serial cable | 32205-005400-100-RS      | RS-232 cable, 150 mm, 2x5 pin                                                       |
| DIO cable    | 32231-000100-200-RS      | DIO cable, 150 mm, 2x5 pin                                                          |

## Packing List

| Item           | Part No.           | Qty | Description        |
|----------------|--------------------|-----|--------------------|
| Screw pack     | 44013-030041-RS    | 4   | Screw pack         |
|                | 44005-030083-RS    | 4   | Screw pack         |
| Wall Mount Kit | 41020-0433C2-00-RS | 2   | Wall mount bracket |

# IVS-110-AL

## Vehicle Fleet Management System

**New**

### Features

- Intel® Apollo Lake processor
- Dual SIM slot
- Optional 3G/Wi-Fi
- 16 x DI/DO
- 1 x HDMI (lockable), 1 x VGA
- Built-in GPS function
- E-Mark certification
- Built-in OBD-II/J1939
- IP4X protection



### Specifications

| Model          |                         | IVS-110-AL                                                                                                                                                                      |
|----------------|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Chassis        | Color                   | Black                                                                                                                                                                           |
|                | Dimensions (WxHxD) (mm) | 261 x 170 x 60                                                                                                                                                                  |
|                | System Fan              | Fanless                                                                                                                                                                         |
|                | Chassis Construction    | Extruded aluminum alloy                                                                                                                                                         |
| Motherboard    | CPU                     | Intel® Atom™ x7-E3950 Processor (quad-core 1.6GHz, 12W TDP)                                                                                                                     |
|                | Chipset                 | SoC                                                                                                                                                                             |
|                | System Memory           | 1 x 204-pin DDR3L SO-DIMM. 4GB pre-installed                                                                                                                                    |
| Storage        | Hard Drive              | 1 x 2.5" SATA 6Gb/s HDD/SSD drive bay                                                                                                                                           |
|                | mSATA / eMMC            | 1 x mSATA (PCIe Mini Slot)<br>1 x eMMC 5.0 (reserved)                                                                                                                           |
| Communication  | WLAN                    | PCIe Mini Wi-Fi 802.11 a/b/g/n/ac (optional)                                                                                                                                    |
|                | Bluetooth               | BT 4.0/3.0+HS (combo with WLAN optional module)                                                                                                                                 |
|                | WWAN                    | PCIe Mini WCDMA/HSDPA/HSUPA (optional)                                                                                                                                          |
|                | GPS                     | On board GPS                                                                                                                                                                    |
| I/O Interfaces | USB 3.1 Gen 1           | 4                                                                                                                                                                               |
|                | Ethernet                | 1 x RJ-45 PCIe GbE by Intel® I211                                                                                                                                               |
|                | COM Port                | 1 x RS-232/422/485 (BIOS configuration)                                                                                                                                         |
|                | Digital I/O             | 1 x 16-bit digital I/O (8-bit input / 8-bit output)                                                                                                                             |
|                | OBD-II/J1939            | 1 x DB9 OBD-II/J1939                                                                                                                                                            |
|                | Display                 | 1 x VGA, 1 x HDMI                                                                                                                                                               |
|                | Resolution              | VGA : Up to 1920 x 1200 @ 60 Hz<br>HDMI : Up to 3840 x 2160 @ 30 Hz                                                                                                             |
|                | Audio                   | 1 x Line out                                                                                                                                                                    |
|                | SIM                     | 2 x on board SIM card slot                                                                                                                                                      |
| Expansions     | Mini PCIe               | 1 x Full/Half-size PCIe Mini slot (reserved for WWAN)<br>1 x Full/Half-size PCIe Mini slot (reserved for mSATA or E-window)<br>1 x Half-size PCIe Mini slot (reserved for WLAN) |
|                |                         |                                                                                                                                                                                 |
| Power          | Power Input             | Cigarette lighter power cable: 9 V~ 36 V DC                                                                                                                                     |
|                | Consumption             | 12V @ 5A<br>(Intel® Atom™ x7-E3950 with 8GB DDR3 memory)                                                                                                                        |
| Reliability    | Mounting                | Wall mount / VESA 100                                                                                                                                                           |
|                | Operating Temperature   | -30°C ~ +70°C with air flow                                                                                                                                                     |
|                | Storage Temperature     | -40°C ~ 80°C                                                                                                                                                                    |
|                | Humidity                | 10% ~ 95%, non-condensing                                                                                                                                                       |
|                | Operating Shock         | 50 Grms, Half-sine 11 ms Duration (w/ SSD, according to IEC60068-2-27)                                                                                                          |
|                | Operating Vibration     | 5 Grms, 5-500 Hz, 3 Axes(with SSD, according to IEC60068-2-64) MIL-STD-810F 514.5C-2 (SSD)                                                                                      |
|                | Weight (Net/Gross)      | 2.4 kg / 3.8 kg                                                                                                                                                                 |
|                | Safety/EMC              | CE/FCC/E-Mark/IP rating : IP 4X compliant                                                                                                                                       |
| OS             | Supported OS            | Microsoft® Windows 10 IoT Enterprise                                                                                                                                            |

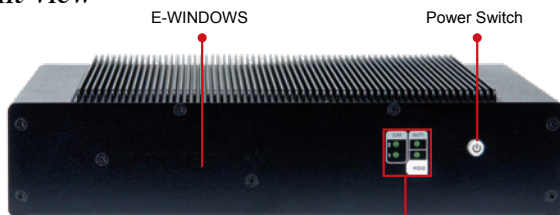
## Fleet Management Tracking System



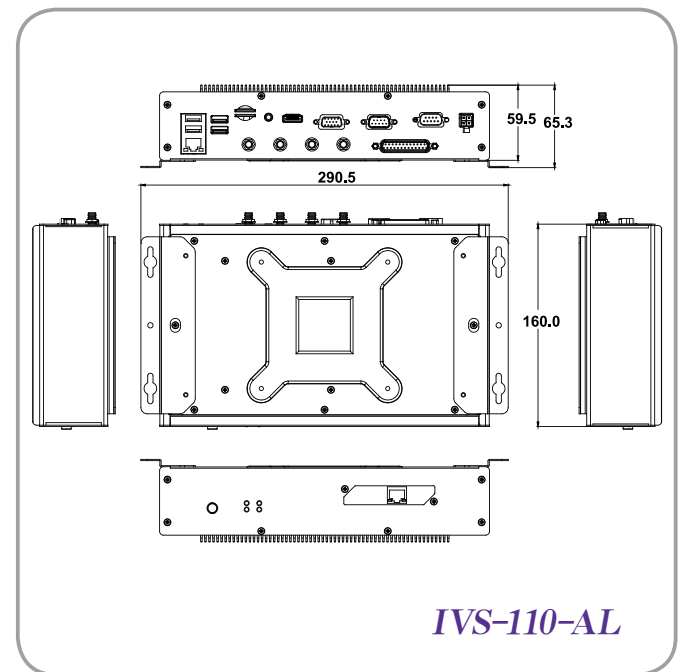
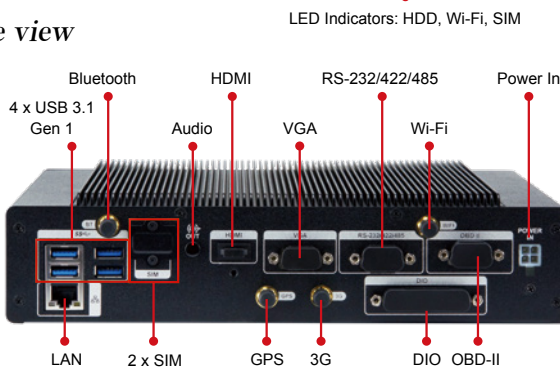
## Fully Integrated I/O

## Dimensions (Unit: mm)

## Front view



## Side view



IVS-110-AL

## Ordering Information

| Part No.             | Description                                                                                                                                                                              |
|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| IVS-110-AL-E3/4G-R10 | Fanless embedded system with Intel® Atom™ x7-E3950 (12W) Processor with 4GB DDR3L pre-installed memory, on board GPS, HDMI, VGA, one GbE LAN, one 2.5" SATA HDD bay, two SIM slots, RoHS |

## Options

| Item                          | Part No.            | Description                                                                                                                                                                                                           |
|-------------------------------|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| GPS/LTE antenna               | 32506-000400-100-RS | Integration Antenna, Magnetic Antenna Base+GPS/4G LTE ANTENNA, RG 174, 5000MM, AU-4S-LTE, GPS Gain:27dB, LTE, Gain:0dBi, 50Ω, SANAV, 1575.42MHz/704-960MHz/1710-2766MHz, VSWR ≤ 2.0, SMA PLUG, REVERSE SMA PLUG, RoHS |
| Power adapter                 | IVIPOWER-4PIN-R10   | Power adapter with 4-pin transfer cable, RoHS                                                                                                                                                                         |
| OBD-II cable                  | 32025-003400-100-RS | Round cable, OBD-II cable, 2000 mm, 24 AWG, (A) OBD-II 16P male, (B) D-sub 9P female, one piece package with label, RoHS                                                                                              |
| Cigarette lighter power cable | 32002-004000-100-RS | Round cable, power cable, car cigarette lighter cable, 2000 mm, 18 AWG, (A) cigarette lighter (5 A 250 V)+ ψ3 green LED, (B) MOLEX 5557-0400 P=4.2, SHANGHAI YING YU, RoHS                                            |
| Wireless kit                  | IVS-WIFI-KIT02-R10  | 1T1R Wi-Fi module kit for embedded system, IEEE802.11a/b/g/n/ac Wi-Fi with Bluetooth 4.0/3.0+HS, 1 x Wi-Fi module, 2 x Antenna, RoHS                                                                                  |
| WWAN kit                      | IVS-3G-KIT02-R10    | 3G module kit for embedded system, F260, 1 x 3G module, RoHS                                                                                                                                                          |
| ACC power cable               | 32002-001900-100-RS | Round cable, power cable, 3000 mm, 16 AWG, (A) MOLEX 5557-04P P=4.2, SHANGHAI YING YU, RoHS                                                                                                                           |

## Packing List

| Item           | Part No.            | Qty | Description                                                                                                                     |
|----------------|---------------------|-----|---------------------------------------------------------------------------------------------------------------------------------|
| Screw pack     | 44005-030083-RS     | 4   | Screw pack                                                                                                                      |
|                | 42005-000603-RS     | 4   | Screw pack                                                                                                                      |
|                | 44003-030052-RS     | 4   | Screw pack                                                                                                                      |
|                | 44045-020031-RS     | 5   | Screw pack                                                                                                                      |
| SATA Cable     | 32801-003608-100-RS | 1   | Sata cable, 3, 150mm/150mm, 26AWG, SATA 7+15P female 180°, SATA 7P female 90°+lock, JST PHR-2 P=2.0, One pcs PKG W/ label, RoHS |
| Wall Mount Kit | 41020-0482C2-00-RS  | 2   | Wall mount bracket                                                                                                              |

## E-Window (for ATO assembly) E-Window

| Part No.         | Description                                                                                                         |
|------------------|---------------------------------------------------------------------------------------------------------------------|
| E-MPCIE-LAN-R10  | PCIe Mini card supports 1-port GbE with Realtek RTL8111E controller, with PMS 194C I/O bracket and 250mm cable, R10 |
| E-MPCIE-DLAN-R10 | PCIe Mini card supports 2-port GbE with Intel I211 controller, with PMS 194C I/O bracket and 250mm cable, R10       |

# IRS-100-ULT3

## Railway Surveillance System



### Features

- Intel® Skylake ULT processor
- Dual M12 LAN port
- VGA / DVI dual display
- Dual SIM card design
- 24V and 110V DC input (±40%) DC input
- 2 x 2.5" hot-swappable SATA SSD drive bay
- EN 50155



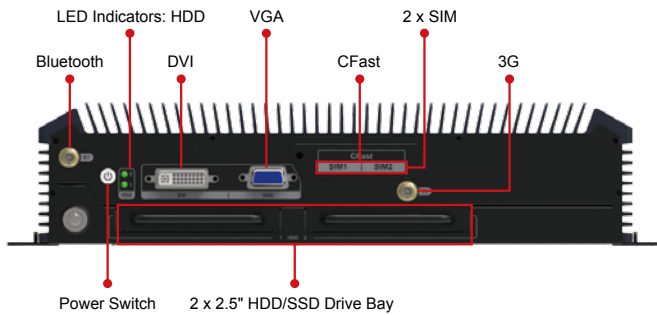
### Specifications

| Model Name     |                         | IRS-100-ULT3                                                                          |
|----------------|-------------------------|---------------------------------------------------------------------------------------|
| Chassis        | Color                   | Blue C                                                                                |
|                | Dimensions (WxHxD) (mm) | 290 x 69 x 225                                                                        |
|                | System Fan              | Fanless                                                                               |
|                | Chassis Construction    | Extruded aluminum alloy                                                               |
| Motherboard    | CPU                     | Intel® Core™ i5-6300U processor (dual-core, 2.4 GHz, 15W TDP)                         |
|                | Chipset                 | SoC                                                                                   |
|                | System Memory           | 2 x 260-pin DDR4 SO-DIMM 4GB pre-installed (system max. 32 GB)                        |
| Storage        | Hard Drive              | 2 x 2.5" SATA 6Gb/s SSD drive bay                                                     |
|                | CFast/CF Card           | 1 x CFast (SATA 6Gb/s)                                                                |
|                | mSATA                   | 1 x mSATA (SATA 6Gb/s)                                                                |
| Communication  | WLAN                    | PCIe Mini Wi-Fi 802.11 a/b/g/n/ac (optional)                                          |
|                | Bluetooth               | BT 4.0/3.0+HS (combo with WLAN optional module)                                       |
|                | WWAN                    | PCIe Mini WCDMA/HSDPA/HSUPA (optional)                                                |
| I/O Interfaces | USB 3.1 Gen 1           | 2                                                                                     |
|                | USB 2.0                 | 1 (M12 connector)                                                                     |
|                | Ethernet                | 2 x M12 connector PCIe GbE by Intel® I211                                             |
|                | COM Port                | 2 x DB-9 RS-232/422/485 (with 1.5 kV isolation)                                       |
|                | Digital I/O             | 1 x Terminal block for 8-bit digital I/O (4-bit input/4-bit output, 1.5 kV isolation) |
|                | Display                 | 1 x VGA, 1 x DVI-D                                                                    |
|                | Resolution              | VGA : Up to 1920 x 1200 @60Hz<br>DVI-D : Up to 1920 x 1200 @60Hz                      |
|                | Audio                   | 1 x Line-out, 1 x Mic-in                                                              |
|                | SIM                     | 2 x SIM card slot                                                                     |
| Expansions     | PCIe Mini               | 2 x Full-size PCIe Mini (for WWAN / WLAN module)                                      |
| Power          | Power Input             | M12 Connector: 24V and 110V DC input                                                  |
|                | Consumption             | 24V @ 2A (Intel® i5-6300U with 4 GB DDR4 memory)                                      |
| Reliability    | Mounting                | Wall mount                                                                            |
|                | Operating Temperature   | -40°C ~ 70°C with air flow (with industrial SSD/CF), compliant with EN 50155          |
|                | Storage Temperature     | -40°C ~ 85°C                                                                          |
|                | Humidity                | 10% ~ 95%, non-condensing                                                             |
|                | Operating Shock         | Compliant with EN 61373 Category 1 Class B                                            |
|                | Operating Vibration     | Compliant with EN 61373 Category 1 Class B                                            |
|                | Weight (Net/Gross)      | 3.9 kg / 5.1 kg                                                                       |
|                | Safety/EM C             | CE/FCC, compliant with EN 50155, EN 50121-3-2                                         |
| OS             | Supported OS            | Microsoft® Windows® Embedded 8, Microsoft® Windows® Embedded Standard 7 E             |

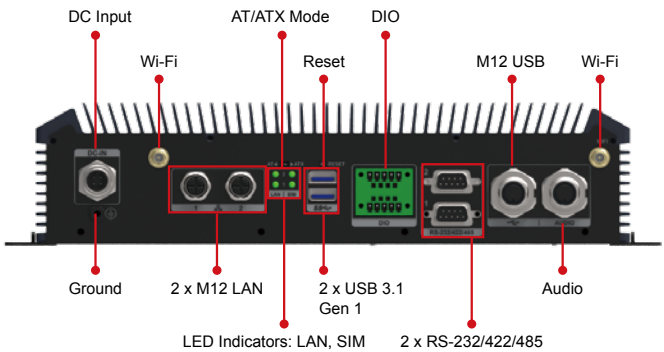


## Fully Integrated I/O

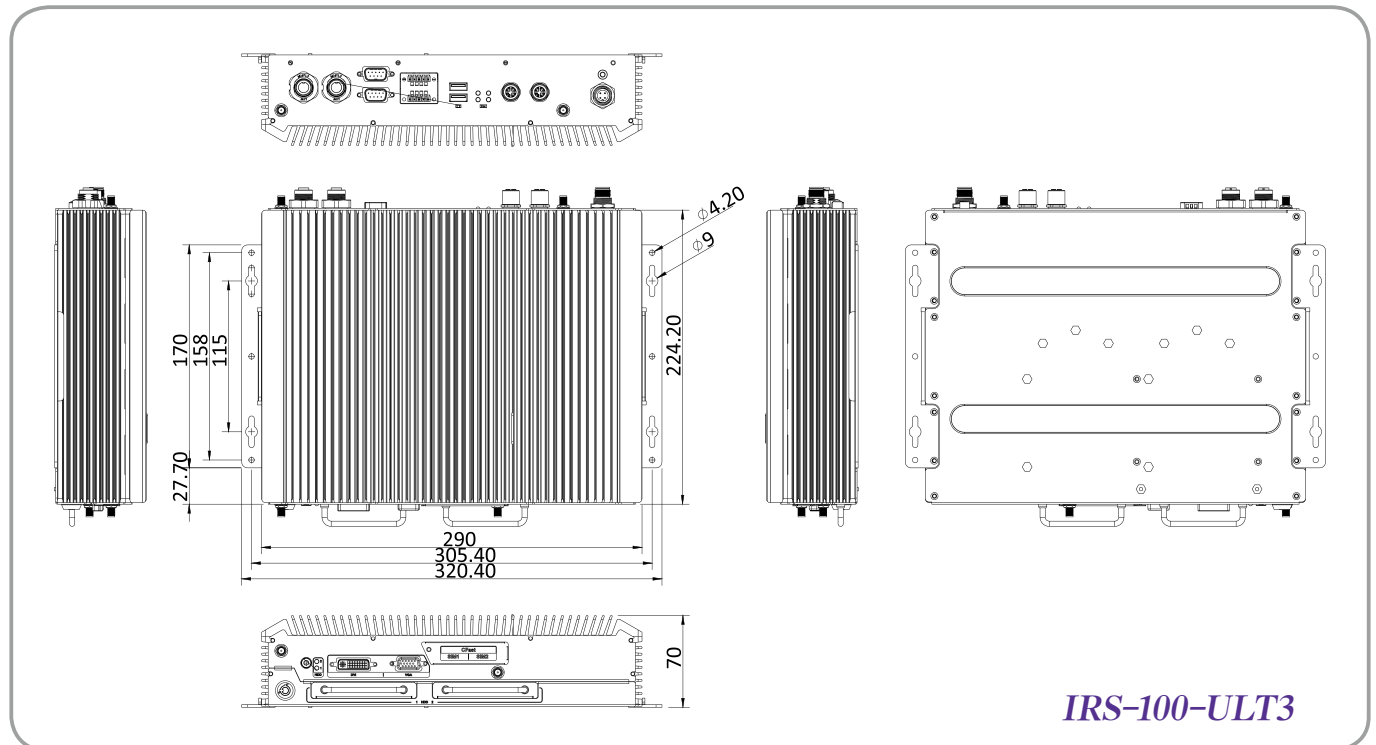
Front view



Rear view



## Dimensions (Unit: mm)



IRS-100-ULT3

## Ordering Information

| Part No.               | Description                                                                                                                                         |
|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| IRS-100-ULT3-I5/4G-R10 | Fanless railway system with Intel® Core™ i5-6300U processor (15W), 4GB DDR4 pre-installed memory, two 2.5" SATA SSD bays, VGA, DVI, two M12 GbE LAN |

## Options

| Item         | Part No.                 | Description                                                                                                                                      |
|--------------|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| OS           | IRS-100-ULT3-WES7E64-R10 | OS Image with Windows® Embedded Standard 7 E 64-bit for IRS-100-ULT3, DVD-ROM, RoHS                                                              |
| DC cable     | 32002-009000-100-RS      | Power cable, 2000 mm, 16AWG, M12 5-pin female; label: V+, V-, GND; RoHS                                                                          |
| USB cable    | 32001-022700-200-RS      | USB cable, 2000 mm, 24AWG; (A) Amphenol LTW: M12 5-pin male IP68 (12-05BMMA-SL8001), (B) USB Type A 4-pin female; RoHS                           |
| LAN cable    | 32013-003400-100-RS      | LAN cable, 1000 mm, 26AWG; (A) METZ: M12 plug 8-pin (MNF881A315-001), (B) RJ-45 8P8C plug; RoHS                                                  |
| Audio cable  | 32007-005400-100-RS      | Audio cable, 1200 mm, 28AWG; (A) Amphenol LTW: M12 5-pin male (12-05BMMA-SL8001), (B) DC stereo jack: 3.5mm*2; RoHS                              |
| Wireless Kit | IRS-100-WIFI-KIT02-R10   | 1T1R Wi-Fi module kit for embedded system, IEEE802.11a/b/g/n/ac Wi-Fi with Bluetooth 4.0/3.0+HS, 1 x Wi-Fi module, 2 x antennas, 2 x cables RoHS |
| WWAN Kit     | IRS-100-3G-KIT02-R10     | 3G module kit for embedded system, F260, 1 x 3G module, 1 x antenna, 2 x cables, RoHS                                                            |

## Packing List

| Item           | Part No.           | Qty | Description        |
|----------------|--------------------|-----|--------------------|
| Wall Mount Kit | 41020-0474C2-00-RS | 2   | Wall mount bracket |
| Screw Pack     | 44015-030061-RS    | 16  | Screw pack         |

# SBOX-100-QM87

Maritime Embedded System

**New**

## Features

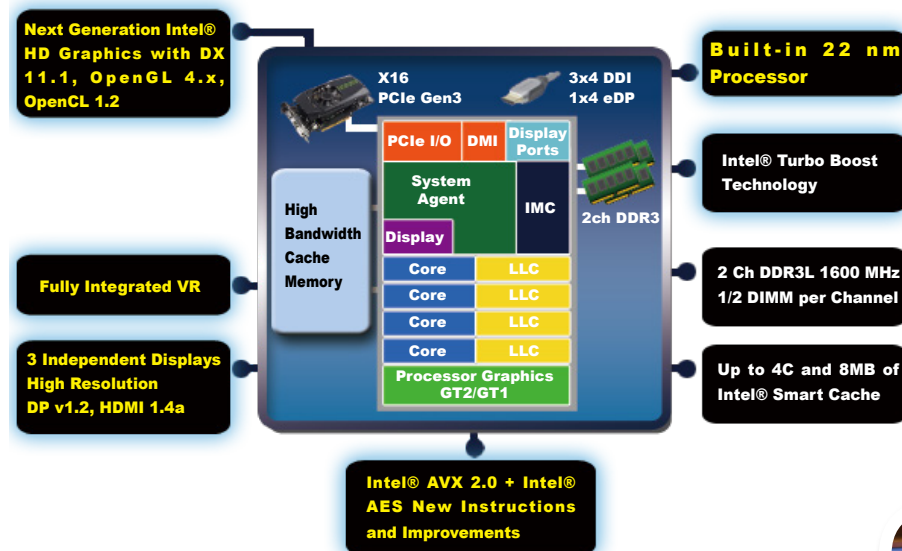
- Fanless marine computer with 4th generation Intel® Core™ i5 dual-core processor
- -15°C ~ +55°C wide temperature
- Isolation protection
  - » 4 x RS-232/422/485 isolated serial ports
  - » Isolated 24 VDC (with tolerance from 18 to 36V)
  - » 2 x Isolated CAN-bus 2.0B
- 2 x 2.5" SSD bay with RAID 0/1 function
- Supports IEI iRIS-2400 (IPMI 2.0 compliant)



## Intel® Core™ i5 High Performance Computing Power in a Fanless Design

IEI's high performance marine solutions are built with the powerful Intel® Core™ i5 CPU within a fanless system architecture. No matter your applications are general marine system management, monitoring or conning systems, radar systems, or ECDIS navigation, IEI's marine computers will give you the most stability than ever.

- Improved CPU performance with Intel® 22nm 4th Generation Mobile Core™ i5-4400E 2.7 GHz processor
- Two 204-pin 1600/1333MHz dual-channel DDR3 SDRAM support up to 16 GB


**-15°C~55°C FANLESS!**


With IEI's fanless solutions, your vessels can avoid the bothersome of replacement of fan, increasing safety and efficiency for the crew and the entire ship.

Three independent aluminum heat sinks help the heat dissipate averagely, and help the system efficiently achieve wide operating temperature range between -15°C~55°C.

## 3 independent displays: HDMI, DVI, and VGA

The three simultaneously independent displays are supported via the on-board video output combinations of VGA, DVI and HDMI. This versatile combination of display output options make the marine system ideal for multi-monitor required applications in the bridge room.



## Multiple Isolated Ports for Comprehensive Protection against Electrical Surges

Ground loop and electric surges are common in the marine applications of electronic products due to the dense placement of devices. These stray electrical signals can cause equipment damage or malfunction.

### ■ 2.5 kV isolation protection on the RS-232/422/485

IEI marine computer is protected from any stray electrical signals from other devices on the ship. Electric surges that were generated from other electronic devices which often passed through serial lines to the marine computer can cause severe damage and malfunction to the computers.

### ■ Isolated 24 VDC (with tolerance from 18 to 36V) power 2250 V DC Input to Output Basic Insulation

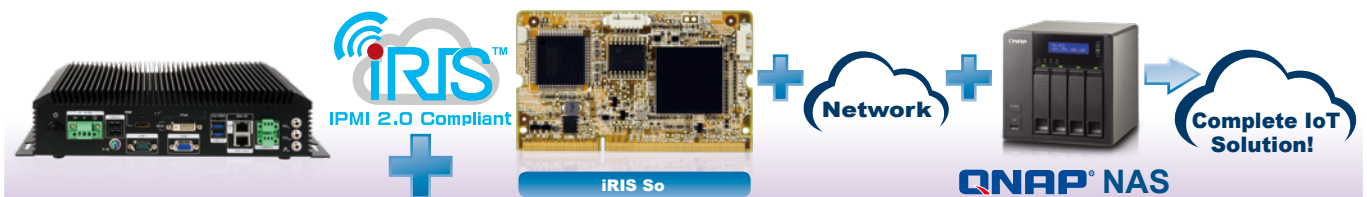
### ■ Two independent CAN 2.0B channels with 2.5 kV isolation protection

CAN 2.0B is a kind of marine electronic data network for communication between marine electronic devices such as chart plotters, navigation instruments, GPS receivers, etc.



## IEI Remote Intelligent Management System

The marine computer supports IEC iRIS remote management solution which helps users to manage multiple devices through single management interface and elevates work efficiency. The iRIS solution only requires a module and Internet connection!

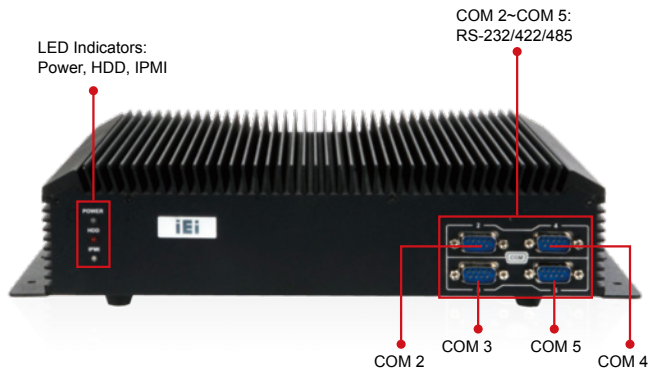


| iRIS Key Feature                 | Detailed Functions                                                                                                                                                                           | iRIS Key Feature                | Detailed Functions                                                                                                                                                                             |
|----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>System health monitor</b>     | <ul style="list-style-type: none"> <li>Hardware monitor</li> <li>Health log</li> <li>Event log</li> </ul>                                                                                    | <b>Screen record</b>            | <ul style="list-style-type: none"> <li>Remote video streaming record</li> <li>Event Trigger Setting &amp; video record</li> </ul>                                                              |
| <b>Remote system maintenance</b> | <ul style="list-style-type: none"> <li>Remote BIOS update</li> <li>Remote OS recovery</li> <li>Remote KVM + One Key Recovery</li> <li>Remote out-of-band backup</li> </ul>                   | <b>Remote power control</b>     | <ul style="list-style-type: none"> <li>Reset Power</li> <li>Power Off Server — Immediately</li> <li>Power Off Server — Orderly</li> <li>Power On Server</li> <li>Power Cycle Server</li> </ul> |
| <b>Active alert &amp; notice</b> | <ul style="list-style-type: none"> <li>Send instant system alerts via e-mail</li> <li>Send instant system alerts via SMS</li> <li>Send instant system alerts to management server</li> </ul> | <b>Remote troubleshooting</b>   | <ul style="list-style-type: none"> <li>Remote software update</li> <li>Remote OS installation &amp; recovery</li> <li>Remote KVM</li> <li>Post code display</li> </ul>                         |
| <b>Remote device control</b>     | <ul style="list-style-type: none"> <li>Fan control</li> <li>Remote KVM</li> <li>Remote setting BIOS</li> </ul>                                                                               | <b>Diagnose before dispatch</b> | <ul style="list-style-type: none"> <li>Health log analysis</li> <li>Event log analysis</li> </ul>                                                                                              |
|                                  |                                                                                                                                                                                              | <b>Group control</b>            | <ul style="list-style-type: none"> <li>Group control</li> </ul>                                                                                                                                |

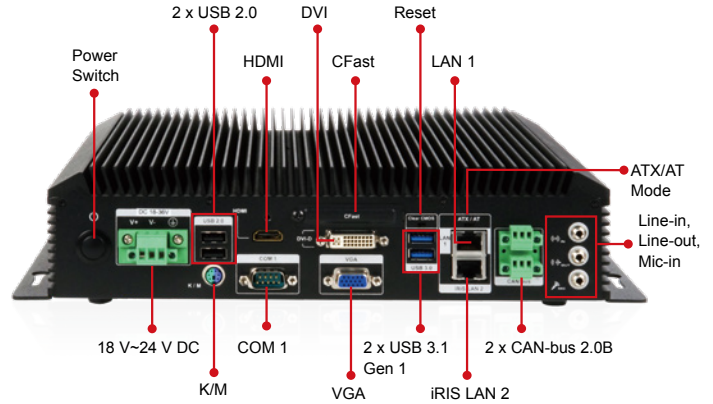


## Fully Integrated I/O

Front view



Rear view

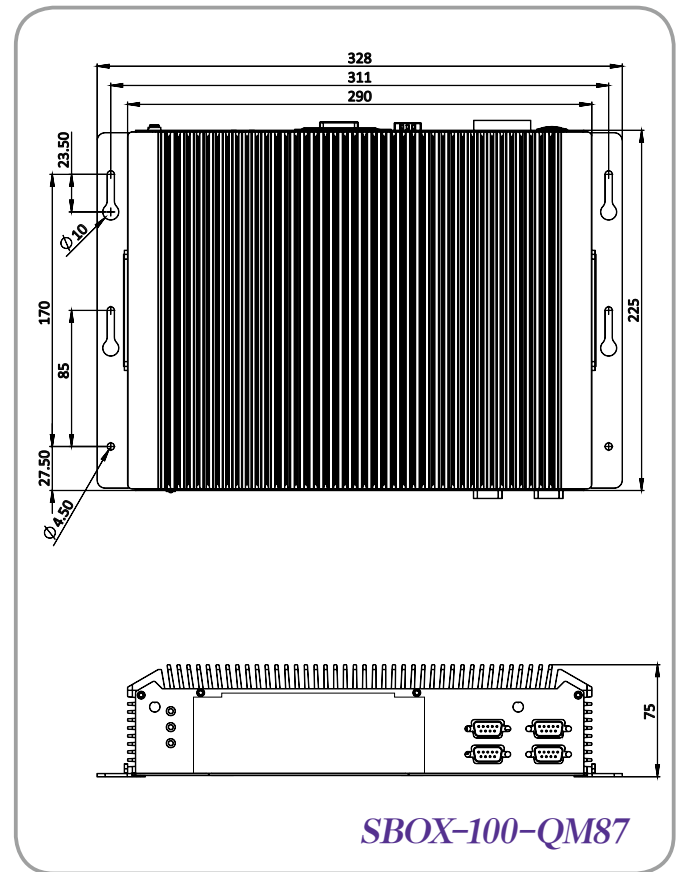


## Specifications

| Model Name             |                         | SBOX-100-QM87                                                                                                             |
|------------------------|-------------------------|---------------------------------------------------------------------------------------------------------------------------|
| Chassis                | Color                   | Black                                                                                                                     |
|                        | Dimensions (WxHxD) (mm) | 290 x 75 x 225                                                                                                            |
|                        | System Fan              | Fanless                                                                                                                   |
|                        | Chassis Construction    | Extruded aluminum alloy                                                                                                   |
| Motherboard            | CPU                     | Intel® mobile Core™ i5-4400E (2.7 GHz, 37W)                                                                               |
|                        | Chipset                 | Intel® QM87                                                                                                               |
|                        | System Memory           | 2 x 204-pin DDR3 SO-DIMM slot (system max. 16 GB)<br>Pre-installed 4 GB DDR3 SO-DIMM                                      |
| IPMI                   | iRIS Solution           | iRIS-2400                                                                                                                 |
| Storage                | Hard Drive              | 2 x 2.5" SATA 6Gb/s SSD bay with RAID 0/1 function                                                                        |
|                        | CF Card/CFast           | 1 x CFast                                                                                                                 |
| I/O Interfaces         | PS2 (KB/MS)             | 1                                                                                                                         |
|                        | USB 3.1 Gen 1           | 2                                                                                                                         |
|                        | USB 2.0                 | 2                                                                                                                         |
|                        | Ethernet                | 2 x RJ-45 with teaming support<br>1 x PCIe GbE by Intel® I217LM<br>1 x PCIe GbE by Intel® I210-AT (2 with 2 kV isolation) |
|                        | COM Port                | 1 x DB-9 (non-isolated)<br>4 x RS-232/422/485 (with 2.5 kV isolation)                                                     |
|                        | CAN-bus/OBD-II          | 2 x CAN-bus (with 2.5 kV isolation)                                                                                       |
|                        | Display                 | 1 x VGA, 1 x DVI-D, 1 x HDMI                                                                                              |
|                        | Resolution              | VGA: Up to 1920 x 1200 @ 60 Hz<br>HDMI: Up to 2500 x 1600 @ 60 Hz<br>DVI-D: Up to 2500 x 1600 @ 60 Hz                     |
|                        | Audio                   | 1 x Line-out, 1 x Line-in, 1 x Mic-in                                                                                     |
|                        | Wireless                | 2 x Antenna SMA hole (reserved)                                                                                           |
| Expansions             | PCIe Mini               | 2 x Full size*                                                                                                            |
| LED Indicator & Button | Indicator               | Power (power on: green, power off: orange), storage (red, blinking), IPMI (blue)                                          |
|                        | Power Input             | Terminal block: Isolated 24 VDC (with tolerance from 18 to 36V)                                                           |
| Power                  | Consumption             | 100 W (Intel® mobile Core™ i5-4400E with 4 GB DDR3 memory)                                                                |
|                        | Mounting                | Wall mount                                                                                                                |
| Reliability            | Operating Temperature   | -15°C ~ 55°C (5°F ~ 131°F) with air flow (SSD)                                                                            |
|                        | Storage Temperature     | -20°C ~ 60°C (-4°F ~ 140°F)                                                                                               |
|                        | Humidity                | 5% ~ 95%, non-condensing                                                                                                  |
|                        | Operating Shock         | IEC 60945 and DNV 2.4 IASC-E10 compliant                                                                                  |
|                        | Operating Vibration     |                                                                                                                           |
|                        | Weight (Net/Gross)      | 4.08 kg / 6.03 kg                                                                                                         |
|                        | Safety/EMC              | EMC/CE/FCC/DNV, IEC 60945 4th, IACS-E10, IEC 61174 compliant<br>IP rating: IP22 compliant rear cover                      |
| OS                     | Supported OS            | Microsoft® Windows® Embedded 8, Microsoft® Windows® Embedded Standard 7 E                                                 |

\*SBOX-100-QM87i-QGW-R10 has only one Half-size PCIe Mini slot

## Dimensions (Unit: mm)



## Ordering Information

| Part No.                 | Description                                                                                                                                           |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| SBOX-100-QM87i-i5/4G-R10 | Fanless marine computer with Intel® Mobile Core™ i5-4400E 2.7 GHz processor, 4 GB DDR3 memory, iRIS-2400 supported, isolated 18 V~36 V DC, R10        |
| SBOX-100-QM87i-QGW-R10   | Fanless marine computer with Intel® Mobile Core™ i5-4400E 2.7GHz Processor, DDR3 8GB, iRIS-2400 supported, with QTS-Gateway, isolated 18~36V DC, RoHS |

## Packing List

| Item                    | P/N                 | Qty | Description             |
|-------------------------|---------------------|-----|-------------------------|
| PS/2 cable              | 32006-000300-100-RS | 1   | PS/2 cable              |
| Rubber pad & screw pack |                     | 1   | Rubber pad & screw pack |



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