



IEI In-Vehicle Solution

IKARPC Series

IVS Series



For more information, please visit: www.ieiworld.com

• IoT in Smart Transportation

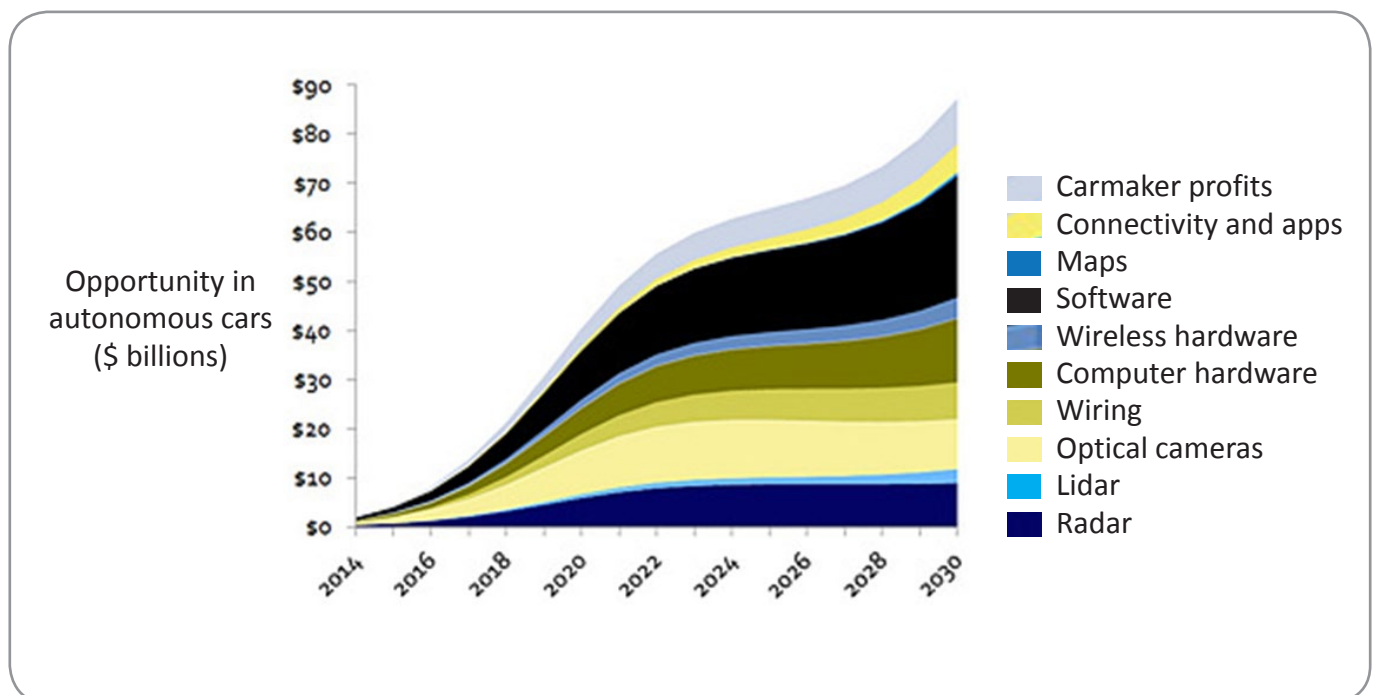
According to research and consultancy firm Gartner, the global market for Internet of Things (IoT) will continue to grow in 2016. There will be nearly 8.7 billion networked devices, growing by 30 percent compared to 2015, while the overall IoT service market will increase substantially to reach 10 billion market size. Manufacturing, public infrastructure and transportation will be the first three industries that incorporate IoT technology. Therefore, intelligent transportation has become more important in our daily life.

Example 1: The traffic is crowded today, how can people do to improve it? Some transportation companies provide services on recommending routes to avoid traffic based on congestion forecast.

Example 2: When going to work in the morning, people want to know the exact time the buses will come. People can use phone app to check the bus arrival time in real time.

In-vehicle computing can help to collect and integrate transportation data for information management center through GPS, RFID and 3G connection.

The transportation data provides information on travel time, origin destination, vehicle volumes, and traffic movements. Therefore, transportation products will become more and more important in the future.



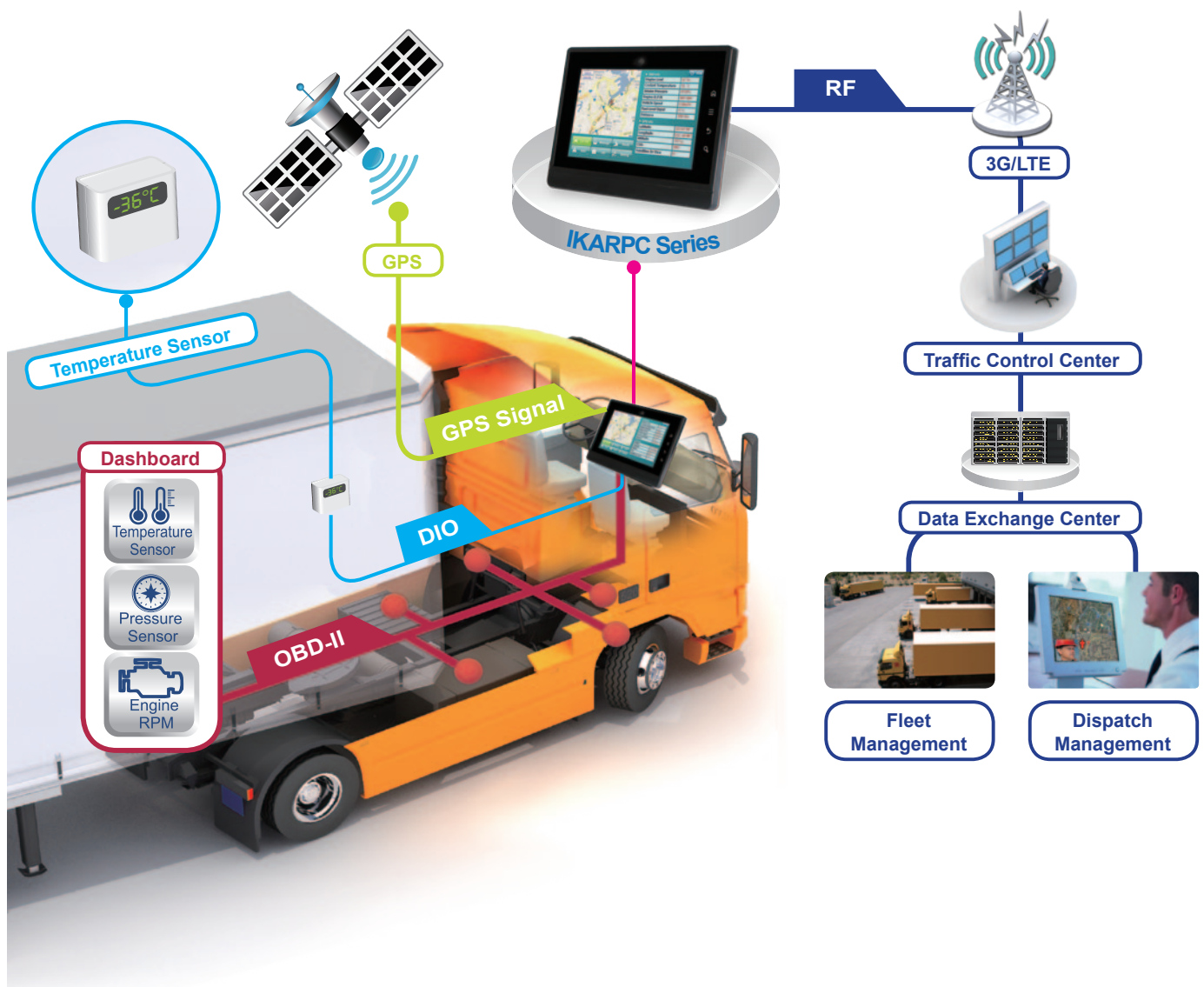
- Based on Lux research estimate, in-Vehicle device is one of the fastest growing transportation in next 10 years.
- In-Vehicle computing is growing stably, and it will reach 30~40 billions US dollars in 2020.

• IEI In-Vehicle Series 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. This paper will focus on introducing in-vehicle applications.

IKARPC 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 IKARPC-07A series is equipped with an ultra-high brightness LCD panel to help drivers avoid low visibility caused by direct sunlight.



■ CAN Bus/OBD-II

The IKARPC 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.

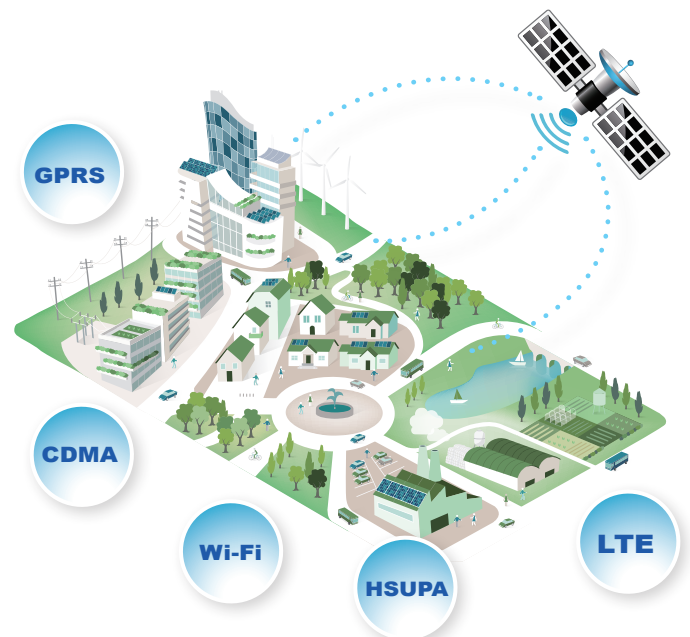


■ X86/ARM solution

The IKARPC-07A 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.

■ Communication

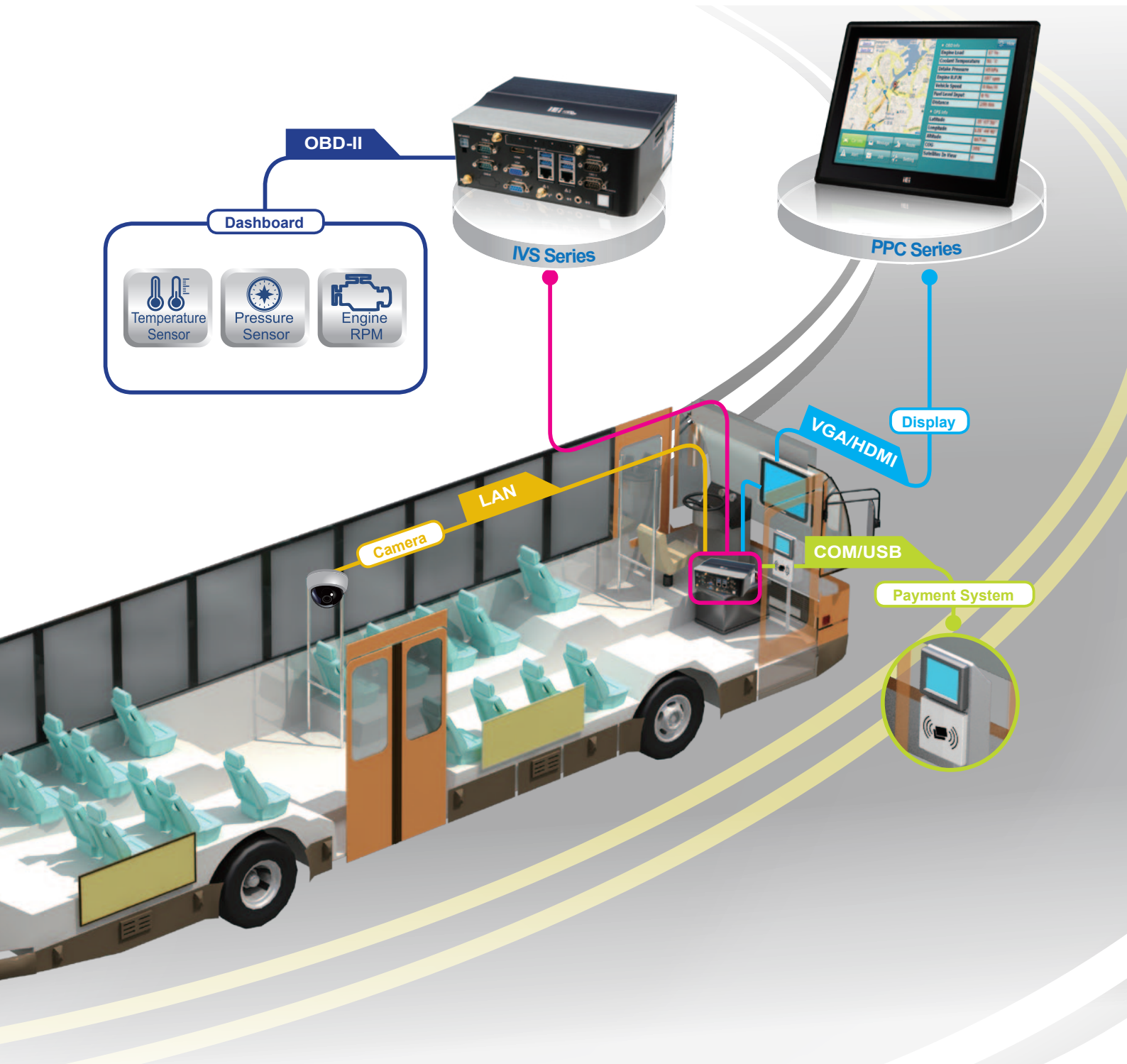
The transportation series reserves multiple PCIe Mini slots for different network communication. Users can use CDMA/GPRS/HSUPA+/LTE to transmit and receive real-time data, use Wi-Fi for data acquisition, or use GPS to get accurate location data.



Model Name		IKARPC-07A-A9	IKARPC-07A-BT	IKARPC-W10A-BT
Motherboard	CPU	Freescale™ i.MX 6 Cortex™-A9 (quad-core, 1.0 GHz)	Intel® Atom™ processor E3826 (dual-core, 1.46 GHz, 7W)	Intel® Atom™ processor E3826 (dual-core, 1.46 GHz, 7W)
	Chipset	N/A	SoC	SoC
	System Memory	On-board 1 GB SDRAM	On-board 2 GB SDRAM	On-board 2 GB DDR3

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



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.



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 IKARPC In-Vehicle series product all get E-Mark certification which are required for the European market.



Model Name		IVS-300-ULT3	IVS-200-ULT2	IVS-100-BT
Chassis	Color	Blue C	Blue C	Blue C
	Dimensions (WxDxH) (mm)	255 x185 x80	255 x 150 x 63	200 x 150 x 76
	System Fan	Fanless	Fanless	Fanless
	Chassis Construction	Extruded aluminum alloy	Extruded aluminum alloy	Extruded aluminum alloy

• Taipei City Bus Management Case Study

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Background

A Taiwan-based system integrator established in 1984 is specialized in transportation systems including bus, train, metro, and airline systems. Due to advancements in technology and the implementation of intelligent transportation systems, Taipei City government is encouraging passenger bus companies to integrate bus information system into its operations.

Challenge

As a total solution provider, the system integrator in cooperation with a major passenger bus company in Taipei were looking for an in-vehicle device that would serve as a tracking and reporting system for buses. The system must be able to provide real-time GPS location of buses to the back office to immediately update location information to the websites, smartphone apps, and passenger signage displays at bus stops.

Solution

The IEI In-vehicle PC is integrated with an extremely sensitive GPS module, which allows it to determine location quickly. Location information is updated on the passenger information system in real-time, allowing citizens to look up the bus's current location and the arrival time on each station.

Benefits

1. Meets specific transportation certifications such as e-Mark and ISO7637, which ensure reliability.
2. Built-in GPS module for sensitive tracking and location.
3. Built-in GPRS that transfers location information to the back office in order for the passenger information system to be updated in real-time.
4. Support dual SIM card to be installed in the system. When the car moves from one country to another, the software tool will decide which SIM card to use and switch to the suitable SIM card.



Conclusion

With the increasing rate of motor vehicles, the surveillance application is becoming more important for the city. IEI IVS Series and IKARPC Series combine all communication systems into one device to provide powerful fleet management capabilities. In addition, road surveillance can be applied through the IVS Series to ensure passenger and traffic safety. With these features provided by our in-vehicle systems, enterprises are able to monitor and manage vehicles more efficiently and productively than ever before.