

DFI

Enables Smart Police Vehicles to Achieve Precise and On-Time Patrols

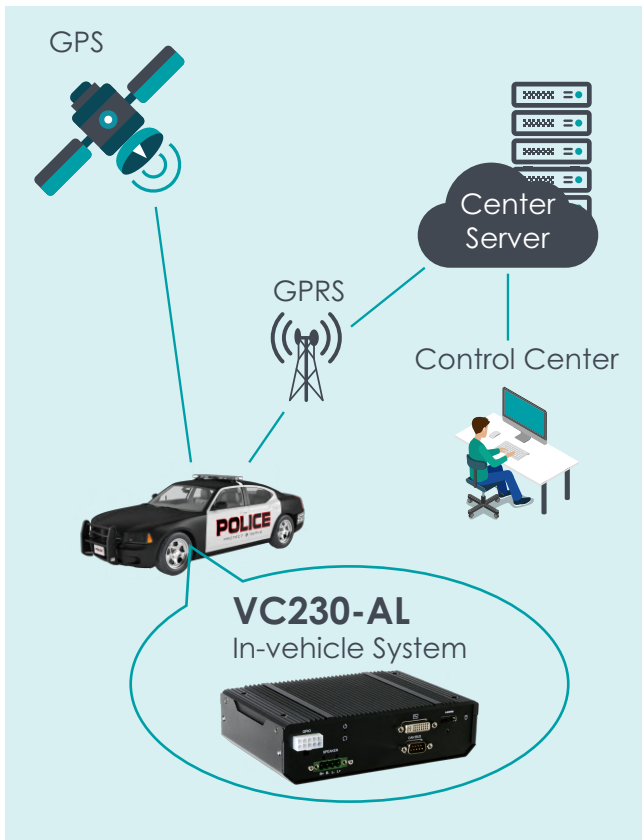
DFI's In-Vehicle Computers' design centers on reliability, MIL-STD anti-vibration, and SWap - small, lightweight, and low power consumption. The systems are certified by E-Mark (E-13) to guarantee the quality level of electromagnetic. DFI's In-Vehicle systems are built-in with Mini PCIe and M.2 expansions for additional connectivity such as 3G/4G, Wi-Fi, GNSS, and CAN-Bus to provide real-time data analysis. Wide-temperature, wide-voltage, and in-vehicle power management jointly ensure stability and astonishing endurance even in harsh environments.

Application: **Police Vehicle Dispatch System**

Region: **Europe**

Solution: **VC230-AL Industrial Computer,
MPE-CAN2 CANBus Module**



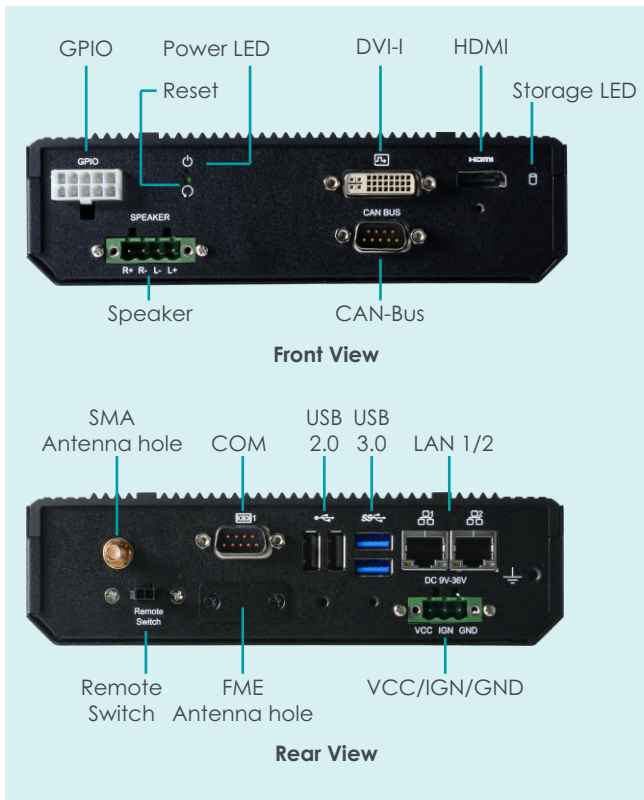


From trains, trucks, automobiles, to self-driving cars, which are in the ascendant development, they are involved in transportation, public safety, and life and property. According to the government regulations, which is most stringent verification process, the electronic system as the computing brain needs high reliability without compromise. "Always connected to the Internet" and "precise positioning" should not be ignored. The network interruption or location error that can be tolerated in ordinary life may cause irreversible consequences if it occurs in the car's electronic system.

Even in-vehicle equipment that is not used for vehicle control, such as police vehicle dispatching systems, also requires high durability of industrial-grade computers such as wide temperature in consideration of different latitudes, resistance to power surge and current noise, comprehensive support of wide-voltage direct current, and HiPOT testing (Dielectric Strength Test) for leakage of current and insulation resistance. In addition to the I/O interface that connects to available peripheral devices, communication protocols and vehicle bus are also indispensable to connect various vehicle electronic controllers to receive multiple vehicle information.

Finally, the ideal hardware specification should adopt the x86 instruction set compatible processor platform, which supports the Windows operating system and many Linux distributions and accelerate software development, it is able to respond to new functional requirements quickly and provide the best service in the shortest amount of time.

An European country deployed DFI's VC230-AL on police vehicles to improve dispatching efficiency. Once the control center receives an emergency call, it can send nearby police vehicles missions and provide relevant information through 3G/LTE communication modules. The system can also offer the shortest or fastest arrival route via GNSS (Global Navigation Satellite System).



This application seems simple but not simple at all. DFI’s VC230-AL can win this government bid because it fully meets the following requirements:

- | E/e-Mark certification: E-Mark certification requires automobiles, motorcycles, safety spare parts, noise, and exhaust gas to comply with the regulation from EEC Directives and European Economic Commission (ECE); if a product meets the requirements, a certificate of conformity is awarded to ensure the safety of driving and that it met the environmental protection requirements.

- | Small and compact form factor, shockproof, and fanless design: the vibration-proof standard conforms to MIL-STD 810G Method 514.6C-3 of military regulations, and the shockproof corresponds to MIL-STD-810G Method 516.6.

- | Rich I/O interface: VC230-AL supports popular video output interfaces such as DVI-I and HDMI, and can directly connect to the speaker. Two SIM cards through the Mini PCIe can connect to different telecom operators for redundancy to avoid network interruption.

- | Built-in GNSS: VC230-AL fully corresponds to GPS/GLONASS/Beidou/Galileo satellite positioning, providing the most accurate location.

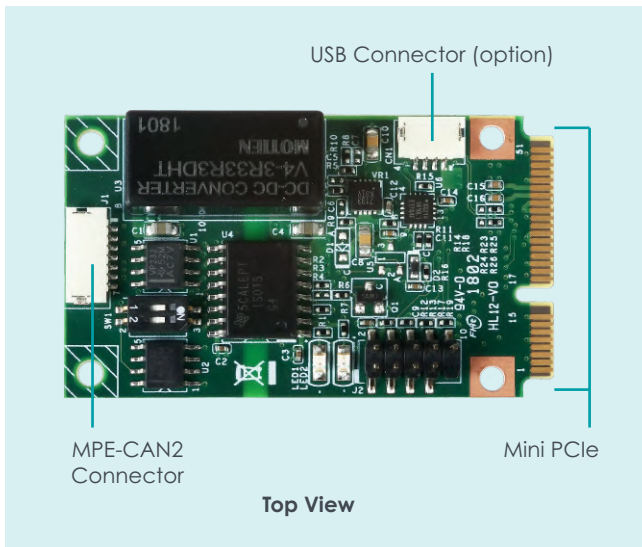
- | Wide Temperature: VC230-AL supports -40°C to 70°C operations temperature and -40°C to 85°C storage temperature. It is suitable for all kinds of environments, including high-latitude region such as Europe.

- | Wide Voltage: VC230-AL support 9 to 36V to protect the equipment in the case of overcurrent and overvoltage.

- | Power Ignition: VC230-AL allows the police vehicles to continue to operate the in-vehicle computer after the engine has been turned off for a while, it automatically shut down the computer correctly to avoid reducing the computer's performance and lifetime when the engine power cuts off.

- | The Intel Atom E3900 series processor supports 15 streams of 1080p30 decoding and H.265 encoding, suitable for image transmission in low bandwidth environments such as smart police vehicles. It can transcode images under the narrow and unstable 3G/LTE bandwidth to a higher encoded rate and transmit clearer picture. It is convenient for personnel to make correct decisions for the first time and can be used as a reference for evidence afterward.

- | DIO : Digital I/O is compatible with various collision detection sensors and can still save complete data in emergencies.



In connection with various vehicle electronic controllers, DFI VC230-AL is equipped with an MPE-CAN2 CANBus module; the specifications are as follows:

■ CANBus (Controller Area Network, CAN) is a popular communication protocol in the automotive and industrial automation fields. MPE-CAN2 supports CANBus 2.0A and 2.0B specifications (11-bit and 29-bit data frame) and 1M bit/s transmission rate and corresponds to optional TTCAN (Time-Triggered CAN) to provide more accurate message transmission.

■ The J1708 and J1939 serial communication standards formulated by the Society of Automotive Engineers (SAE) can communicate with other vehicle electronic controllers through the serial port and receive vehicle diagnostic information.

■ On-Board Diagnostics (OBD) II standard can monitor the engine's working conditions, electronic control system, and other functional modules of the vehicle in real-time during the operation.

- MPE-CAN2 complies with 2.5kV surge protection defined by EN61000-4-5.
- MPE-CAN2 complies with the 2.5kV HiPOT protection defined by IEC 60950-1.
- MPE-CAN2 supports 40°C to 85°C operation temperature.

DFI also provides an agile response to customer's requirements and customized services, in this case, to ensure that all the needs of the client were fully met.

Finally, the IEC 62368-1 standard, which actively prevents potential hazards, will replace IEC 60950-1. The effective date in the United States and Europe is December 20, 2020, and non-compliant products will not be sold in major markets. DFI also provides a series of automotive industrial-grade computers that correspond to the new specifications. In this era of rapid changes in digital technology, DFI will continue to launch perfect customer solutions.

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DFI

Founded in 1981, DFI is a global leading provider of high-performance computing technology across multiple embedded industries. With its innovative design and premium quality management system, DFI's industrial-grade solutions enable customers to optimize their equipment and ensure high reliability, long-term life cycle, and 24/7 durability in a breadth of markets including factory automation, medical, gaming, transportation, smart energy, defense, and intelligent retail.

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