



Smart Bus Solutions

Cervoz Industrial-Grade Storage Solutions for Smart Buses

Today, over 50% of the world's population lives in urban areas. The portion is estimated to reach nearly 70% by 2050, making transportation one of the toughest challenges for cities around the globe. With the advancement of automotive IoT and 5G communication technologies, ITS (Intelligent Transportation Systems) is being implemented in many cities to improve traffic congestion, safety, and cost-effectiveness.

Smart Public Transportations

An ITS system is capable of making critical and timely traffic decisions from management centers or roadside infrastructure through networks of sensors, intelligent embedded solutions, distributed computing ability, and wireless connection capabilities. In other words, an ITS uses new and emerging technologies to make moving around a city more convenient, more cost-effective (for both the city and the individual), and safer.

As environmental awareness rises, more and more local governments have set goals to raise the proportion of people using public transport. Many have embraced and developed intelligent public transportation systems to increase efficiency and safety with lower operating costs. Among all, smart buses are considered one of the most welcomed choices for their lower infrastructure costs and faster deployment.

Smart Buses

A smart bus is equipped with sensors, real-time surveillance systems, advanced computing devices, wireless communication technologies, digitalized telematics systems, and a GNSS (Global Navigation Satellite System). Out of the above-mentioned technologies, video surveillance systems are one of the most critical. They help collect real-time traffic information, supervise drivers' behaviors, secure passengers from various angles.



In addition, with video analytics ability and edge AI imbued, it becomes the key to automated services such as total passenger control and AFC (Automated Fare Collection). Meanwhile, smart buses interconnect with the surroundings and the control center through GNSS and IoT technologies. Hence the operator can conduct fleet management and provide better PIS (Passenger Information System) service that delivers essential real-time information to passengers. Furthermore, as smart buses collect traffic data continuously and collaboratively, operators can gain more insights to improve service, enhance utility efficiency, and rearrange routes or timetables when necessary.

Challenges and Solutions

Due to the ongoing development of in-vehicle surveillance, communication, and computing technologies, the demand for real-time massive data collection and analysis continues to grow, leveraging the need for large-capacity and high-transfer-speed storage solutions. However, when it comes to in-vehicle applications, the key lies in reliability against tough onboard situations and challenging environments, such as unstable power supply, vibration, extreme temperatures, and humidity.

Harsh In-Vehicle Environment

Although high temperatures, shock, and vibrations can cause damage and severely reduce the lifespan of electronic devices, these factors are common for in-vehicle systems. All Cervoz [in-vehicle products](#) are compliant with **ISO-16750-3** standards, ensuring that they can withstand shock and vibration for a continuous 24 hours, and survive a 100cm-6-face drop test. These stress tests simulate the actual conditions of vehicles in an outdoor operation. Our optional Anti-Vibration Fill also can help secure PCB and main chips in their place and prevent solder joints from coming loose. All Cervoz flash storage products come with [wide temperature](#) versions that can operate stably between -40°C to 85°C. In addition, our in-house developed [conformal coating](#) is optional compliant to all our embedded products, protecting the storage from dust and humidity in vehicles.

Power Supply Instability

With the emergence of electric transportation, power supply instability and outages may pose problems for owners and operators. Cervoz [Powerguard](#) is our firmware-and-hardware integrated power loss protection technology. Powerguard provides additional power to the memory during an unexpected power outage to complete the current flash write operation and protect data integrity and the firmware. Meanwhile, its under-voltage protection feature prevents recording erroneous and incomplete data, which may damage data validity and the device during a power outage.

Cervoz Industrial T376 family is a line-up of high-capacity and high-transmission-speed 3D TLC SSDs with Powerguard function and DRAM buffer design. The DRAM Buffer technology utilizes an additional DRAM that functions the way a cache does in a hard disk to increase the products' performance, endurance, and lifespan. The line-up consists of multiple form factors, including [2.5" SATA](#), [mSATA](#), and [M.2 2280](#), all compliant with the SATA III interface.

Know more about Cervoz's solutions for:

- [Smart EV Chargers](#)
- [Parking Lots](#)
- [Smart Traffic Management](#)

Contact a [Cervoz Sales Rep.](#) to learn more.