Intelligent E-Bus

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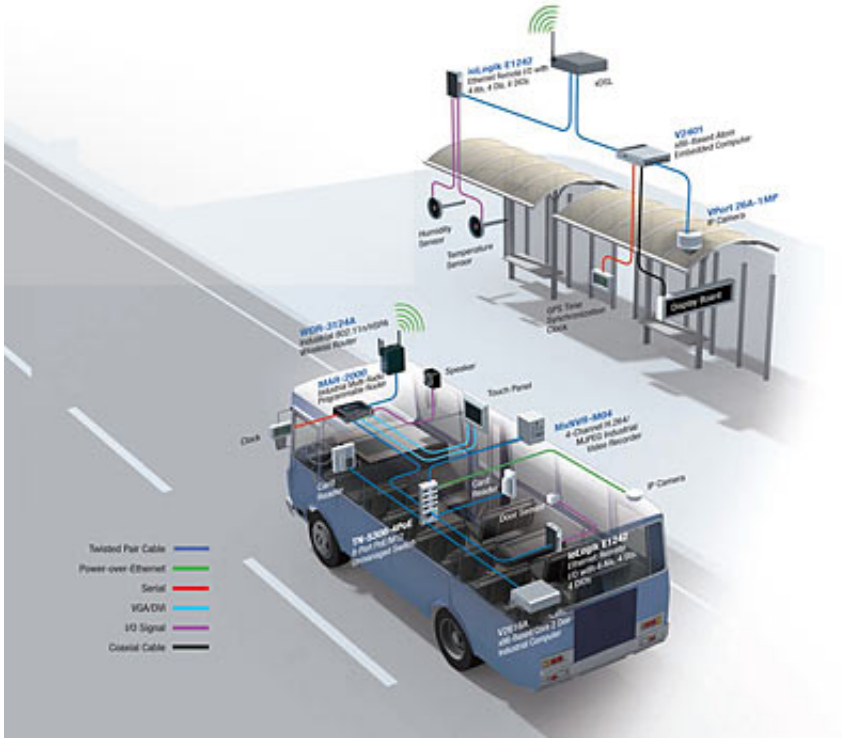


Introduction

Intelligent bus transportation systems and networks provide both operators and passengers with many different benefits. An intelligent E-Bus solution allows an operator to increase bus capacity and route efficiency. In addition, with the additional passengers that E-Bus routes attract, an operator can expect increased passenger revenue. Passengers are attracted to riding E-Buses for multiple reasons. One of the most important is the feeling that they can control their own journey. An intelligent E-Bus solution can provide passengers with bus arrival times on electronic signs at bus stops, smart phones, web pages, and even automated telephone information systems. Using these systems, passengers can optimize their time, and depending on the local climate, avoid being exposed to uncomfortable weather conditions.

While onboard, passengers utilizing the automated bus stop notification displays can easily arrive at their destination even if it is their first time in the destination area. Another important intelligent E-Bus attraction for passengers is safety. Central monitoring of both the bus and bus driver improves safety by providing real-time incident reporting and management. An ATMS solution keeps the driver up-to-date on the latest road information, and traffic lights can be optimized to keep the bus on schedule. As an added benefit, to attract even more passengers, WiFi can be deployed on an intelligent E-Bus so that passengers can enjoy productive connectivity during their transit. Most importantly, efficient bus utilization and more bus passengers means fewer vehicles on the road, and reduced road congestion and greenhouse emissions..

Network Requirements

Shock and Vibration Resistant

All nodes in an intelligent E-Bus, including embedded controllers, switches, and I/O devices, must be able to withstand the constant vibration and occasional heavy shocks that inevitably occur. The nodes should be reliable enough to continue providing surveillance and data communication despite being continually exposed to mechanical stresses.

Rugged Embedded Computers

ITS applications require self-contained embedded computers that can stand up to all types of harsh weather conditions. The computers need to provide constant control of the surveillance nodes and continual output for information display panels, even when exposed to wide temperatures and wet humid conditions.

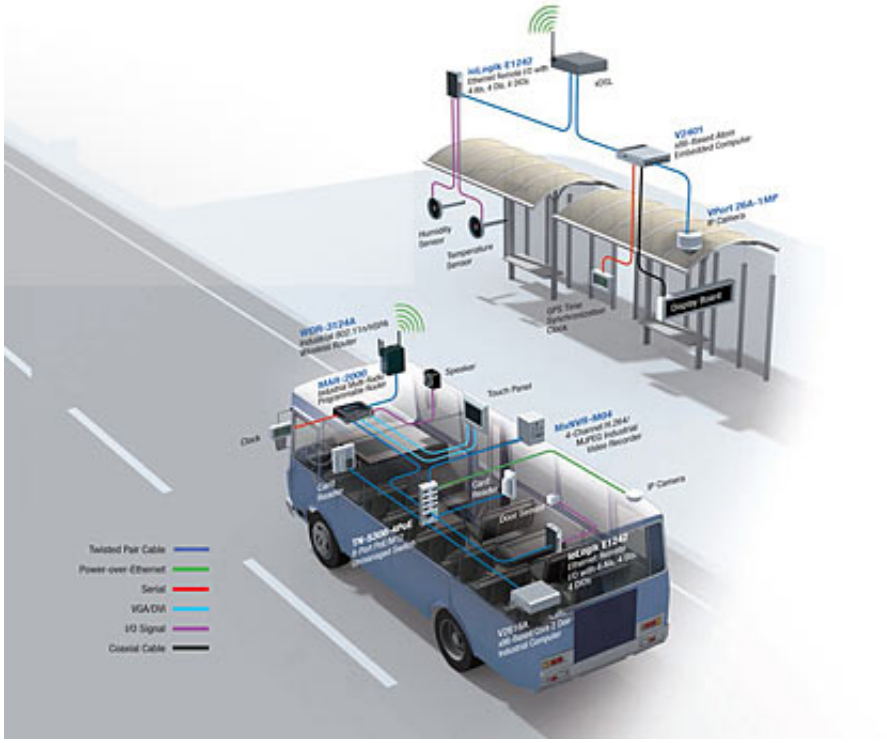
Reliable Mobile Connectivity

Providing network communication to and from moving intelligent E-Buses and multiple remote bus stops requires mobile connectivity. Cellular IP gateways need to provide reliable connectivity and be tough enough to withstand the rough environment of both buses and bus stops.

Integrating ATMS with Dispatch Systems, and Information Distribution Systems

The data produced by the surveillance and data communications equipment onboard an E-Bus must be compatible with the existing ATMS and bus dispatch systems so the systems can be integrated with the intelligent E-Bus solution. In

addition, bus location data needs to be integrated with multiple information distribution systems to provide convenient passenger access.

Moxa Solutions

- Rugged design with anti-vibration M12 Ethernet connector
- MIRF (Moxa Intelligent Routing Framework) WAN management software AP to enable seamless passenger wireless service
- Reliable moving vehicle anti-vibration NVRs with cost-effective hot-replaceable SSD or HDD hard disks
- Cellular connections with dependable GuaranLink technology
- Versatile Ethernet or serial device connectivity over TCP/IP cellular networks