ADLINK
Leading EDGE COMPUTING

Application Story

ADLINK Industrial Gateway Controllers Streamline Electric Car Charging



www.adlinktech.com

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Introduction

With increased concerns over the overall detriments caused by fossil fuel dependency, a wide variety of alternative energy sources have been migrated from theory to practical application to popular usage. One such application is the use of electricity to partially or fully power automotive vehicles, a measure quickly gaining widespread adoption.

At present, however, the amount of time required to charge can frequently limit the convenience of the electric vehicles. Despite steady improvements in distance between charges, drivers still need to know that they can charge their vehicle at convenient times and places, such as, for example, at the office, parked for the night, or even a quick top-up while shopping.

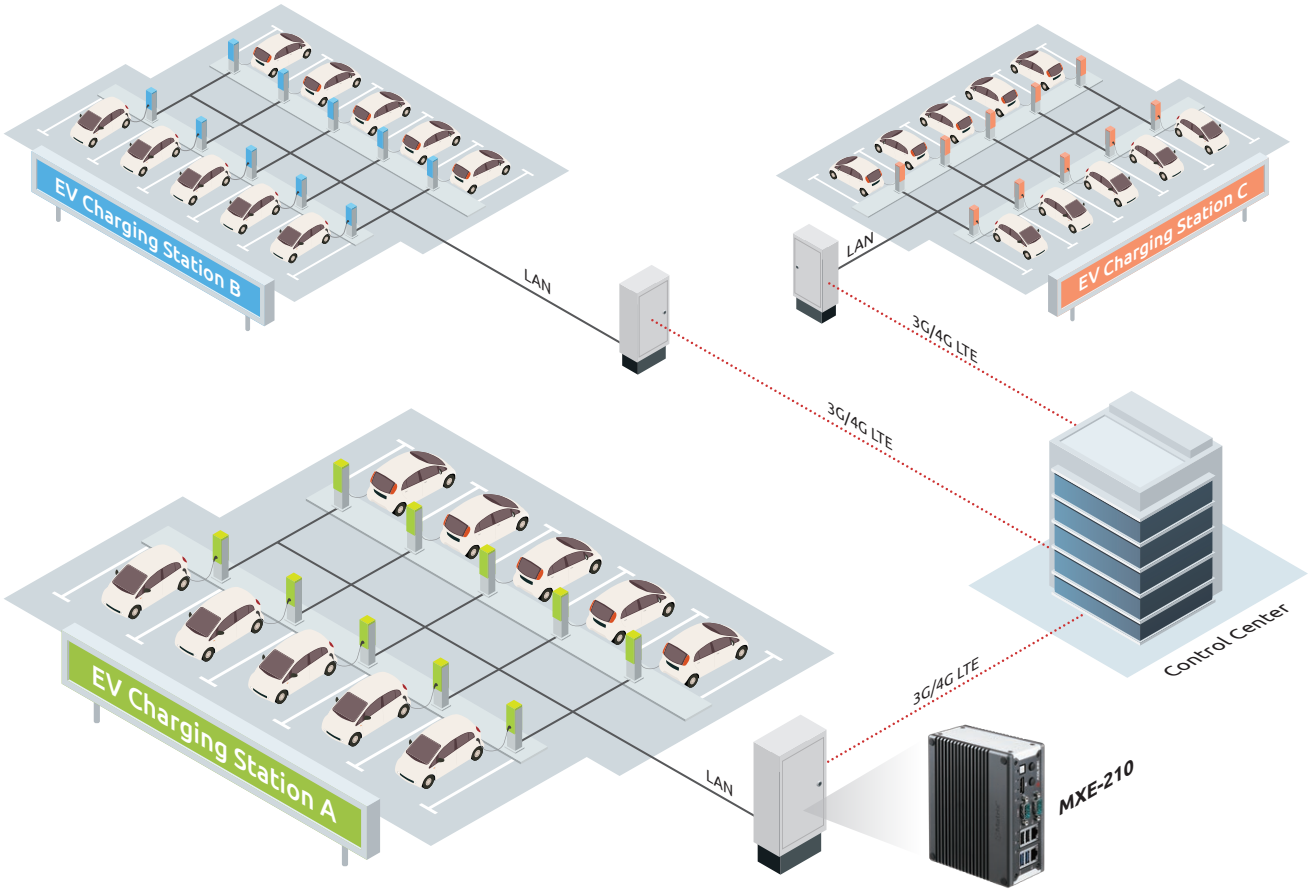
Accordingly, creation of a solution enabling charging of cars wherever they are and whenever it's wanted has become a major priority for related providers.

Application

The massive boom in electric car popularity creates a potential for many millions of charging stations to be installed worldwide. In one application, a leading automotive manufacturer seeks to implement charging station infrastructure. This manufacturer plans to introduce over 30,000 charging stations in 2018 with many more in the near future.

Planned locations, spanning multiple geographic regions, require localized industrial gateway control capable of managing up to 10 charging poles per installation and housed in a central control cabinet. Communicating with a remote control server (for billing and other administrative duties) via a 3G or 4G LTE signal, the installed equipment must be standardized and able to withstand extremes of temperature and otherwise harsh conditions, including excess unit vibration and limited ventilation.

For operational efficiency and cost concerns, it is also required that the controller units be compact, and support full connection to unspecified third party equipment, irrespective of protocol, whether wired or wireless. As well, since the controller system manages confidential individual transaction information, data security is critical.



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ADLINK Solution

The ADLINK solution consists of the ultra-compact (140(W) x 110(D) x 58(H) mm) MXE-210 industrial gateway controller housed in a local control cabinet. The low power consumption Intel® Atom™ Processor X Series-based computer perfectly meets not only rigorous environmental requirements but also features the flexibility to be tailored to specific user needs.

The MXE-210's -40°C to 85°C operability with 5 Grms vibration tolerance and 100 G shock combines with versatile I/O ports for seamless connectability with ancillary devices, such as network switches. Further, since it is intended that subsequent versions of the solution include the industrial gateway controllers will fully support wireless communication with each other via ZigBee protocol, replacing the current LAN connection, two internal mPCIe slots make the MXE-210 100% ready to accept wireless card installation at a later date.

The robust gateway controller is ideally suited to supporting system functions, with ample power enough to manage utility fees and multiple payment options such as credit cards and digital wallets, such as Apple Pay and Alipay, among others, with payment data returned to central admin via 3G, 4G LTE, or LoRa. Sensitive information is thoroughly secured from onsite tampering by Intel® Boot Guard and UEFI Secured Boot.

Conclusion

Operable at -40°C to 85°C for much longer than the required minimum of four hours, the MXE-210 is ideal for widespread regional implementation across a range of climatic conditions, and eliminates the need for operators to test and validate different controller types, reducing time expenditure and easing the burden of maintaining diverse controllers.

The MXE-210's communication flexibility provides a wide range of readily supported protocols to remit data to central system administration, providing not only scalability for future upgrades but also reducing manpower demands for nationwide operations.





Wide Temperature Range



Compact Size



Rich I/O



Multiple Communications

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