EM-I22J 2-in-1 rugged tablet assists in autonomous operations for mines

Challenge

Tage I-driver is a company specializing in autonomous-driving transportation technologies and services in mining areas. Before the use of Emdoor Information's rugged tablets, ordinary industrial displays have been used as functional terminals for transportation in mining areas. They meet the requirements of the initial use of the mining scenarios, however, some problems gradually emerge in daily use, such as the long response delay of the resistive touchscreen, few interfaces, difficulty to adapt to the harsh environmental conditions of mining areas, and other problems, which greatly reduces the accuracy and efficiency of mining operations. Therefore, the client urgently needs safe, rugged, and stable devices to replace ordinary industrial displays.

Solution

According to the client's needs and the environmental conditions of the mining area, Emdoor Information's EM-I22J 2-in-1 rugged tablet can replace the previously used ordinary industrial displays. It improves the stability experience of autonomous mining vehicles and ensures accurate mining transportation through IP65 and MIL-STD-810G protection in waterproof, dustproof, and anti-vibration, the unified adaptation of the Windows 11 operating system, integration functions of extensive interfaces, and more features.

Benefits

EM-I22J 2-in-1 rugged tablet has rich interfaces and strong compatibility, and with the client's self-developed terminal software installed on the mining vehicle and its excellent ruggedness, it can adapt to the changing road conditions and dusty environment in the mining area and assists in the mining operations brilliantly without interruption caused by bumpiness. Its stable wireless communication signal and GPS precision positioning system can efficiently receive task instructions and monitor the transport route of mining vehicles, greatly improving the efficiency and safety of mining transportation.

EM-I22J

2-in-1 rugged tablet

2-in-1Rugged Tablet PC Solutions

Challenge

Mining transportation is often accompanied by bumpy road conditions, extreme weather, remote areas, and other factors. Therefore, safety is the priority in production. Besides, difficult recruitment and high personnel mobility affect stable operations as well, so autonomous-driving transportation is the fundamental solution. However, due to the complexity of the environment and the diversity of mining vehicles, the need to replace human driving requires a more unified, safe, and stable autonomous-driving transportation system.

Tage I-driver is an enterprise focusing on autonomous-driving transportation technologies and services in mining areas. Its products are mainly used in all kinds of mining vehicles such as large mining trucks, wide-body transport vehicles, and all kinds of auxiliary vehicles such as excavators, bulldozers, command vehicles, etc. Based on its self-developed systems and intelligent hardware, it covers two modes of solution delivery and operation of autonomous-driving transportation, which meets the autonomous operation during the whole process of "loading, transporting, and unloading", efficient collaborative work, and intelligent scheduling of large-scale cluster work.

Before using Emdoor Information's rugged tablets, the client has been using ordinary industrial displays for human-computer interaction. Although ordinary industrial displays are low-cost and meet the requirements of the initial use of the mining scenarios, they do not show reliable performance in waterproof, dustproof, and shock-proof in daily use, and are prone to failure when it encounters dust and bumpiness in mining areas, resulting in interrupting the power signal, data loss, and equipment wastage. In addition, the long response delay of the resistive touchscreen also greatly reduces

the work efficiency, and the limited number of interfaces for ordinary industrial displays is impossible to connect multiple peripheral devices, making it difficult to integrate a unified and efficient autonomous-driving transportation solution. At this time, an intelligent terminal with both stability and scalability has become a necessary equipment condition for the client to apply the overall solution of autonomous-driving transportation in mining areas.

Solution

After comparing the rugged tablets of different manufacturers, Tage I-driver finally chose the EM-I22J 2-in-1 rugged tablet with both security, scalability, and efficient performance as a display and execution terminal of the autonomous-driving transportation solution according to its actual use scenarios and needs.

Solution of EM-I22J

EM-I22J 2-in-1 rugged tablet with scalability and compatibility as an intelligent terminal for mining vehicle operation, it is installed and fixed on the production and auxiliary vehicles in the mining area through the vehicle mount. Equipped with the self-developed autonomous-driving mode of Tage I-driver and the Windows 11 operating system, EM-I22J is easily adapted to the In-vehicle System, Ground System, and Cloud Control Platform, to integrate the full-stack autonomous-driving transportation solution and operation service.

The autonomous-driving transportation scheme of Tage I-driver covers dozens of mining areas and hundreds of mining vehicles. Through the extensive coverage and stable built-in networks of 4G/5G, WiFi, and Bluetooth of EM-I22J, mutual communication and information sharing between

mining vehicles and the Cloud Control Platform can be realized. In open-pit mining operations, EM-I22J receives the command file issued by the Cloud Control Platform and displays it on its 12.2-inch HD screen. Drivers of electric forklifts, excavators, bulldozers, and command vehicles can read and send instructions to the autonomous mining trucks to enter and leave the mining area, set the docking position, and complete loading and unloading operations, to efficiently complete the tasks.

Benefits

Safety assurance of mining vehicle transportation

EM-I22J 2-in-1 rugged tablet meets the standards of MIL-STD 810G, IP65-grade protection, and 1.22 meters of fall resistance, and it can work between the extreme temperature of -20° C to 60° C. With its own reliable waterproof, dust-proof, and anti-shock performance, it can adapt to complex road conditions and extreme environmental conditions in different mining areas. There will be no lag, loss, and other failures in the complex environment of mining areas, to ensure that the mining transport is not interrupted, and reduce the maintenance cost of equipment as well.

Mining vehicle real-time intelligent scheduling

EM-I22J supports a variety of wireless communication modes such as 4G, 5G, dual-band WiFi, and Bluetooth, which widely

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covers every corner of the mining area. By interacting with the Cloud Control Platform, it can quickly upload and share data information of mining vehicles to achieve visual management of the whole process of transportation.

Integration solution of autonomous-driving transportation

Different from ordinary industrial displays, EM-I22J has rich interfaces (USB port, HDMI, network port, serial port, 12PIN Pogo Pin, and more.) and high compatibility, which can connect more operating equipment and systems to diversified applications and handle multiple tasks at the same time, forming a complete, efficient, and convenient autonomous-driving transportation solution for mines.

Customer Background

Founded in 2016, Tage I-driver is a Chinese "National-Level High-Tech Enterprise" and a "National-Level Specialized and New 'Little Giant' Enterprise", specializing in autonomous-driving technology for mining vehicles, product development, and the design and implementation of overall engineering solutions for unmanned mines. Tage I-driver launched a one-stop autonomous mining transport solution, consisting of the In-vehicle System, Ground System, and Cloud Control Platform, realizing the large-scale commercial use of autonomous mining vehicles, to provide safe, green, efficient, and economical autonomous-driving transportation service.

Volume Button +   Power on/off Button

Custom Button   Volume Button –

Front Camera   Corning gorilla glass touch panel

RS232 Serial Port

RS485 Serial Port

USB 2.0 Port

216mm

319.6mm

24.3mm

pogo pin interface

Scanning Button   Removable battery   Rear Camera   1D/2D barcode Scanner

Power DC Jack
RJ45 Network Port

USB 3.0 Port

USB 3.0 Port

HDMI Port
Type C Port
Audio port

Protection corner   Speaker