

DFI

The Ultra-Thin, Stable, Highly Reliable, and Shock-Resistant EC700-BT Helps Customers Build the Most Trusted overhead rail-mounted inspection robot for pipe gallery

From electric power, oil and gas, rail transit, water affairs, mining, aquaculture, ports, to metallurgy and other industries, urban underground pipe corridors, power tunnels, power distribution houses, traffic tunnels, rail transit tunnels, power plant coal trestle bridges, industrial plants, etc. are common scenarios of the pipe gallery. High pressure, electromagnetic solid, and humidity are primarily complex and in high-risk environments. Therefore, the inspection robots that run on overhead rails and move around in the pipe gallery have always been a ubiquitous demand. The ultra-thin, stable, high-reliability, and shock-resistant EC700-BT helps customers build the most trustworthy overhead rail-mounted inspection robot for pipe gallery.

Region: **China**

Industry: **Inspection Solution**

Application: **Overhead rail-mounted
inspection robot for pipe gallery**

Solution: **EC700-BT**





Scenarios such as urban underground pipe corridors, power tunnels, power distribution rooms, traffic tunnels, rail transit tunnels, power plant coal trestle bridges, industrial plant areas, etc., have never been suitable for on-site human operations, especially hazardous work such as detecting corrosion of cooling water loop pipes in nuclear power plants. Therefore, an inspection robot that moves around on a pre-laid track and has robotic lifting arms mechanism has become an essential equipment in this type of field.

A Chinese company founded in 2011, whose technology is based on multi-dimensional motion control and artificial intelligence algorithms, has developed a series of solar panel cleaning robots, wheeled inspection robots, track inspection robots, and firefighting robots that work by throwing dry powder to extinguish fires. These robots also serve many industries such as electric power, oil and gas, rail transit, water affairs, mining, aquaculture, ports, and metallurgy, and provides reliable and

economical solutions with intelligent inspection solutions for these industries.

Its inspection robots move on pre-laid lightweight tracks to inspect designated areas and operate reliably in complex environments such as high pressure, electromagnetic solid, and humidity. The robot carries two sets of 360° webcams, ambient gas sensors, partial discharge sensors, and other equipment to obtain multi-dimensional data from the inspection area, then using AI intelligent recognition algorithms to perform meter readings, defect diagnosis, and analysis with thermal imaging. In addition, the centralized robot control and management platform can connect multiple robots to perform intelligent data analysis, along with early warning of faults and defects, and intelligent unmanned inspection.

Due to long-term operation in complex and high-risk environments such as high pressure, electromagnetic solid, and humidity, the operating

brain of the orbital inspection robot needs to have the following essential features:

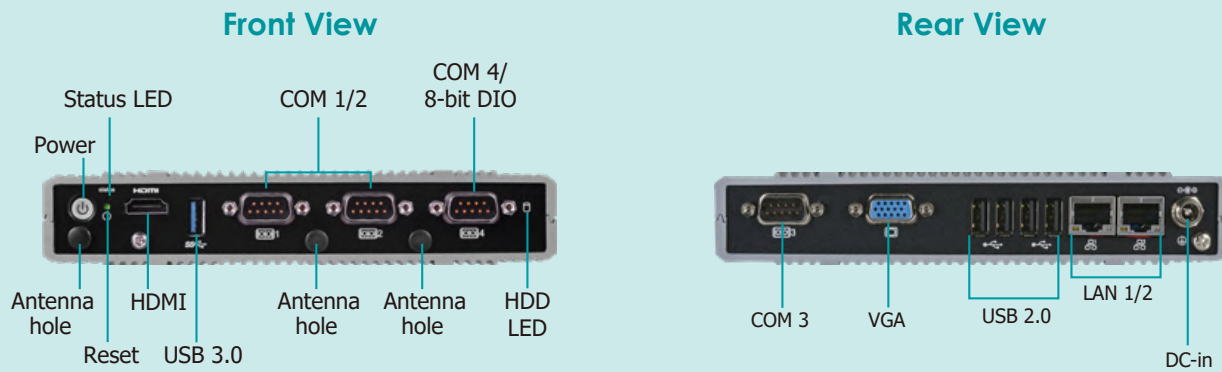
Since the robot has been running on the track for a long time and the route may have ups and downs like a roller coaster, shock resistance is required to ensure the system's stability. The system's memory and storage devices should also be rooted on the motherboard (such as mSATA or eMMC) to improve reliability.

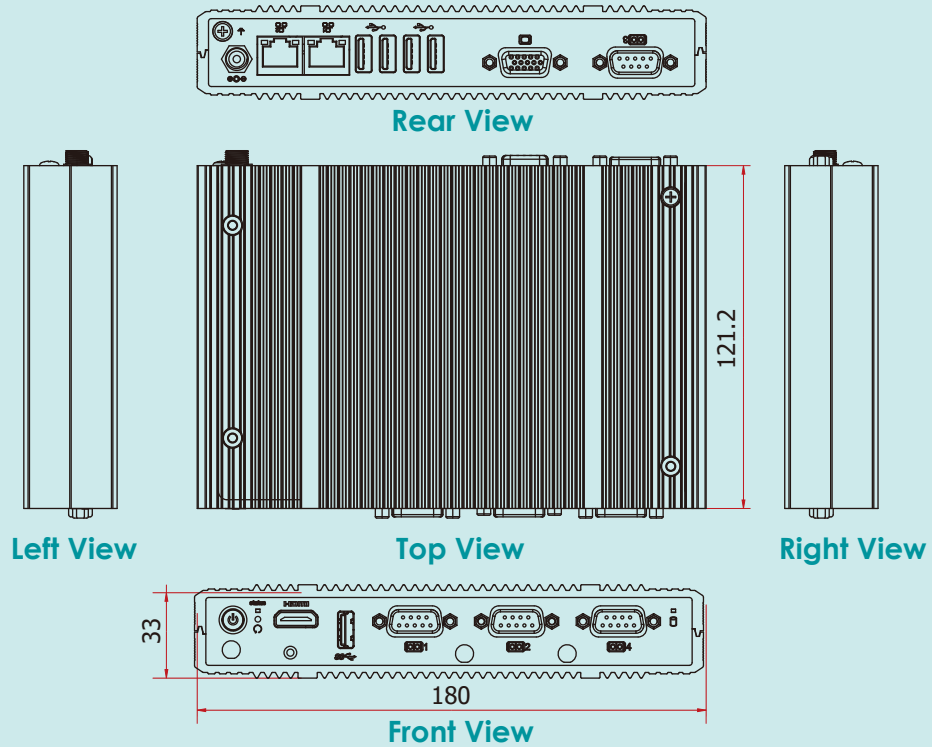
To reduce the wear of the track, the inspection robot must do its best to be miniaturized and lightened the weight, but the heat dissipation capacity should not be disregarded. The lower the processor power consumption is, the longer the battery life is.

COM ports connected with a large number of mechanical devices and correspond to RS-232/422/485 simultaneously. It should also have sufficient number of USB ports connected to a variety of sensors.

A wide voltage (such as 9-36V DC) is needed in the industrial field, diversified wireless network expansion capabilities (WiFi / 3G / 4G / GPRS), and the SIM card is required for mobile communication. All those are necessary specifications for this type of robot.

Therefore, this customer chose DFI's EC700-BT because this embedded system combines anti-vibration onboard memory, mSATA SSD, ultra-thin body design, four sets of COM ports, 800g lightweight, and low power consumption. It meets the heat dissipation requirements of the narrow space in the pipe gallery robot, and everything perfectly meets the needs of customers. Furthermore, the EC700-BT also has a model that supports memory error correction code (ECC) for more robust memory data integrity. According to the Intel IOTG product schedule, the processor used in the EC700-BT will be supplied until the first quarter of 2028, which means that customers will not have





to worry about out-of-stock issues within a few years and increase the return on investment.

Whether it is a overhead rail-mounted inspection robot for pipe gallery or an inter-shelf shuttle with similar applications, DFI's EC700-BT and the newer EC700-AL are a perfect match. If you want to build the most trustworthy rail-type robot, the complete DFI solution must not be missed.

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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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