High-Performance Computing Engine for Various Robots and Remote Controllers

DFI

Automatic Robot Solution

www.dfi.com

/ AGV
/ AMR
/ Material Handling
/ SCARA
/ Service Robot

Automatic Robot Solution

DFI's Solution Provides Reliable and Stable High-Performance Computing Engine for Various Robots and Remote Controllers

To see is to believe. DFI has contributed to the opportunities arising from robotics for our partners and has actual performance and worth-sharing evidence across AGV, AMR, Material Handling, SCARA, Service Robot, and even Robot Management System.

With the popularization of artificial intelligence applications and the development of around-the-clock global logistics, mobile robots' demand in industries is dominated by e-commerce and manufacturing and has continued to rise. Demand for robots in manufacturing facilities worldwide is a key driver to the global industrial robot market. The articulated segment accounted for around 39.2% of the global industrial robots market in 2019.

In 2020, affected by the raging COVID-19, the public avoid going out in fear of infection. Not only has e-commerce orders surged, but significant e-commerce companies must also expand the deployment of autonomous mobile robots (AMR) and automatic guided vehicles (AGV).

The Necessities To Robots

Stable, long-term, and uninterrupted productivity comes from several critical factors to implement in robots.

Smarter robots need more powerful computing performance, more diverse sensors, and durability to withstand different environments. On the whole, its control unit must meet the following requirements:

- High performance
- Sophisticated I/O interface
- Low power consumption
- Resistance to harsh environments
- Robust wireless network
- Smaller form factor

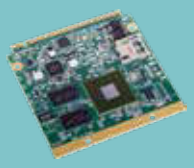
Simply put, in the world of robots, the industrial computer does rule. DFI lines up a comprehensive product line to meet the need of customers.

Furthermore, robots also need industrial computer as control units to provide necessities that can not be satisfied with consumer-grade products, these factors may seem cliché, but they can only be achieved with a wealth of experience.

How DFI helps?

- High reliability and long life span.
- Multiple sensor interfaces, such as popular RS-422 for laser scanners.
- No performance loss caused by vibration and signal interference

Our Products to Power UP Robots

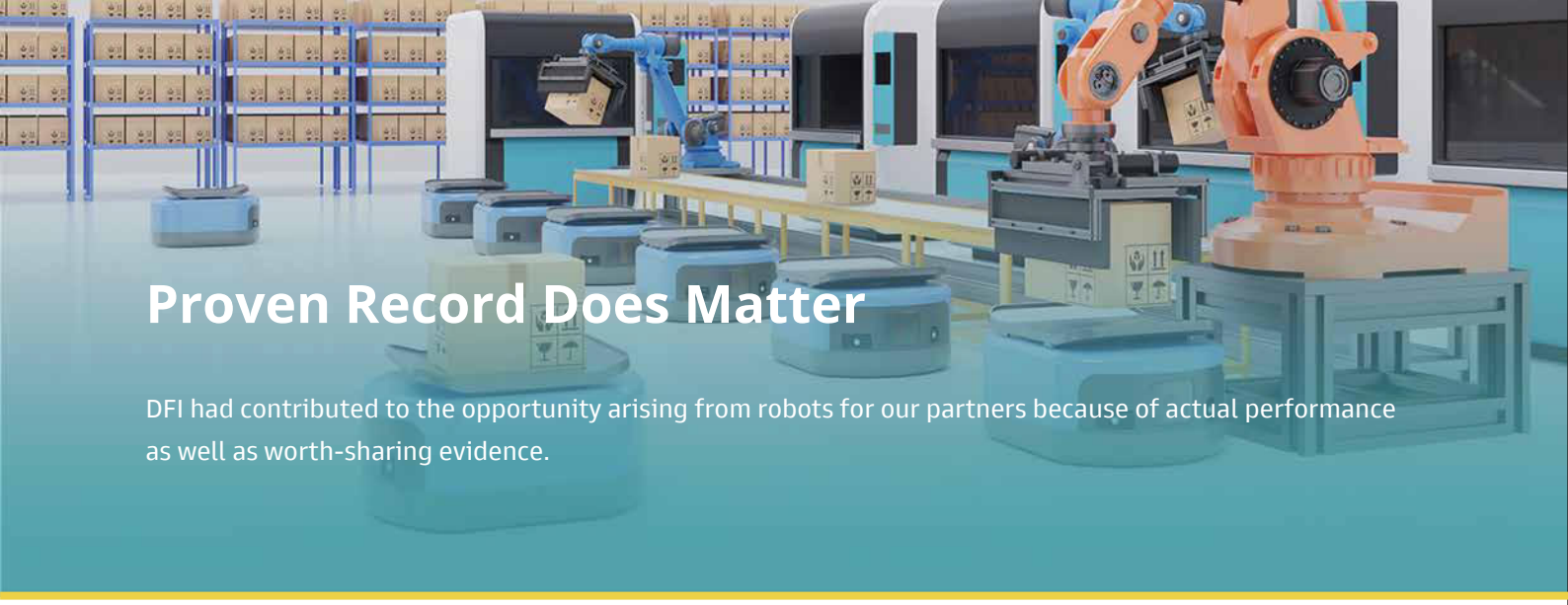


System-On-Modules

Industrial Motherboards

Embedded Systems

Industrial Panel PCs & Displays



Proven Record Does Matter

DFI had contributed to the opportunity arising from robots for our partners because of actual performance as well as worth-sharing evidence.

By Industry

- Automative
- Contruction
- Defense
- Electrical & Electronics
- Food & Beverages
- Health & Pharmaceutical
- Logistics
- Rubber & Plastic
- Metal & Machinery

By Application

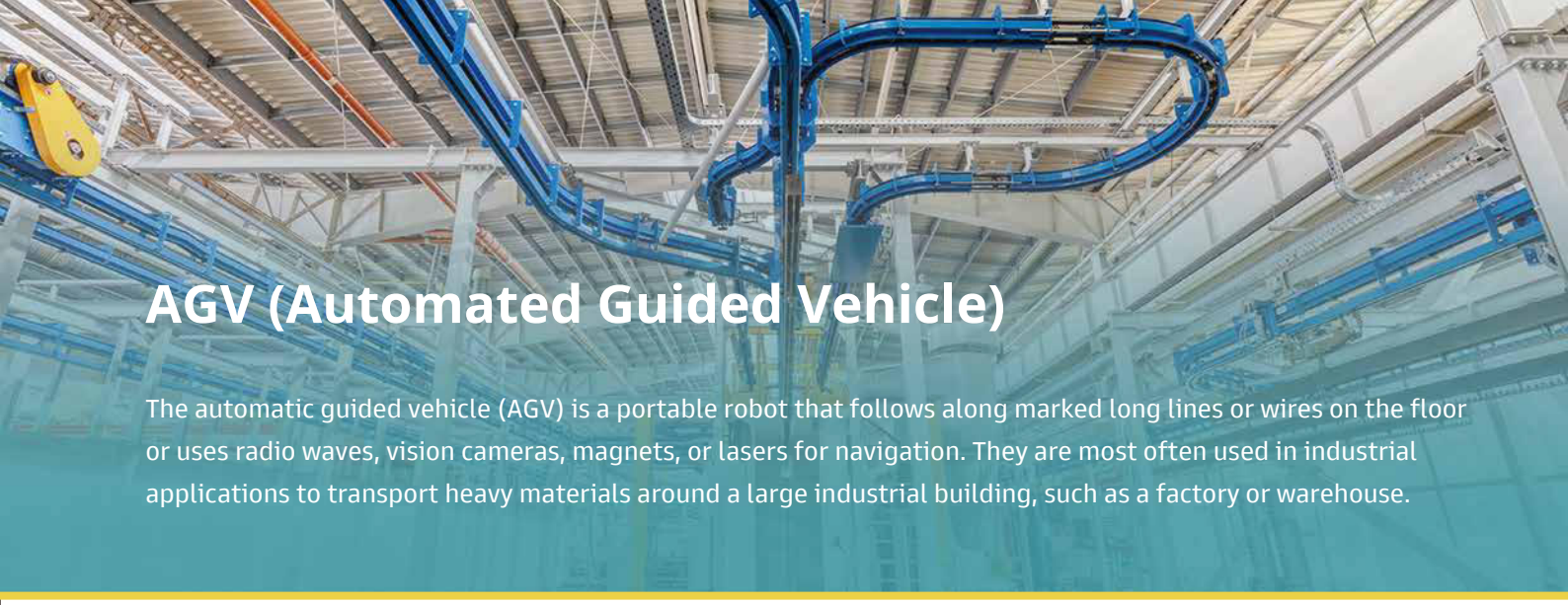
- Assembling
- Cutting & Processing
- Material Handling
- Painting
- Pick & Place
- Welding & Soldering

By Robot Type

- Articulated
- Cartesian/Linear
- Collaborative
- Cylindrical
- Parallel
- SCARA

Across different robot types, applications, and industries, controllers inside robots work as computing brains and should provide high performance, sophisticated I/O interface, low power consumption, resistance to a harsh environment, robust wireless network, compact form factor, and product life span for over ten years.

Desire for Innovation



AGV (Automated Guided Vehicle)

The automatic guided vehicle (AGV) is a portable robot that follows along marked long lines or wires on the floor or uses radio waves, vision cameras, magnets, or lasers for navigation. They are most often used in industrial applications to transport heavy materials around a large industrial building, such as a factory or warehouse.

EC700-BT

Region : China / Taiwan

- Intel Atom® Processor E3800
- 4GB/2GB DDR3L ECC onboard
- 1x 2.5" SATA drive bay
- Supports Wi-Fi, 3G/4G, and GPRS application
- Error Correcting Code (ECC) delivers a high level of data integrity, reliability, and system uptime
- 15-Year CPU Life Cycle Support Until Q1' 28

Hanging Rail

EC70A-SU

Region : China / Taiwan

- 6th/7th Generation Intel® Core™ Fanless Embedded System
- 4GB/8GB DDR4 memory onboard
- 1x 2.5" SATA 3.0 drive bay
- Supports 2 Mini PCIe for wireless application
- Rich I/O ports: 2 Intel GbE, 4 COM, 4 USB 3.0
- 15-Year CPU Life Cycle Support Until Q3' 30

Warehouse Logistics

EC700-BT

Region : China

| Intel Atom® Processor E3800
| 4GB/2GB DDR3L ECC onboard
| 1x 2.5" SATA drive bay
| Supports Wi-Fi, 3G/4G, and GPRS application
| Error Correcting Code (ECC) delivers a high level of data integrity, reliability, and system uptime
| 15-Year CPU Life Cycle Support Until Q1' 28

SD103-Q170

Region : China

| 7/6th Gen Intel® Core™ with Intel® Q170
| 2 DDR4 SODIMM up to 32GB
| Three independent displays: LVDS + DVI-I + HDMI*/DP
| Multiple expansion: 1 PCIe x4, 2 Mini PCIe
| Rich I/O: 2 Intel GbE, 4 COM, 4 USB 3.0, 4 USB 2.0
| 15-Year CPU Life Cycle Support Until Q3' 30

EC220

Region : Japan

| Intel Atom® Processor E3800 Modular-Designed System
| Supports DDR3L SODIMM up to 8GB
| 2x 2.5" SATA drive bays
| 1 Vertical USB for securing data from unauthorized access (optional)
| 2 expansion slots: PCIe x16 (x1 signal) and PCI expansions
| 15-Year CPU Life Cycle Support Until Q4' 28

Desire for Innovation

SU551

Region : Taiwan

- 7th/6th Gen Intel® Core™ 3.5" SBC
- Wireless communication: Mini PCIe
- Rich I/O: 2 Intel GbE, 4 COM, 4 USB 3.1 Gen 1, 2 USB 2.0
- 1 DDR3L SODIMM up to 8GB
- Three independent displays: VGA + LVDS + DP++
- 15-Year CPU Life Cycle Support Until Q3' 30

*Picture for reference purposes only.

As a flawless combination of impressive stylish design and excellent computing capability, the EC70A-SU/KU Series based on the high-end 6th/7th Gen Intel® Core™ i7/i5/i3 processors deliver outstanding processing capability in a fanless and compact enclosure. And it is designed for space-limited and compute-intensive solutions, such as the emerging Autonomous Mobile Robot (AMR).

EC70A-SU
https://www.dfi.com/product/index/122

EC70A-KU
https://www.dfi.com/product/index/1462

Front View

EC70A-SU/EC70A-KU

Rear View

AMR (Autonomous Mobile Robot)

Compared with AGV, the AMR is much more sophisticated. It is packed with sensors and powerful onboard computers that help it to understand its operating environment. AMR does not need a pre-planned deployment like AGV. The AMR uses cameras, built-in sensors, laser scanners, and sophisticated software to detect its surroundings and choose the most efficient route to the target.

SU253

Region : China

- 6th Gen Intel® Core™ 4" SBC
- Dual channel DDR4 2133MHz memory down up to 8GB
- Three independent displays: VGA + DP++*/HDMI + LVDS*/eDP
- DP++ resolution up to 4096x2304 @ 60Hz
- Rich I/O: 2 Intel GbE, 6 COM, 4 USB 3.0, 2 USB 2.0
- 15-Year CPU Life Cycle Support Until Q3' 30

Fire Fighting

EC500-SD

Region : China

- 6th/7th Generation Intel® Core™ with Intel® Q170
- Supports DDR4 SODIMM up to 32GB
- Three independent displays: 1 VGA + 1 DVI/HDMI + 1 HDMI/DP
- Rich I/O connectivity: 2 GbE, 4 COM, 4 USB 3.0, 2 USB 2.0
- 2 Mini PCIe slots support mSATA and Wi-Fi modules
- 15-Year CPU Life Cycle Support Until Q4' 30

Autonomous Patrolling

Desire for Innovation

EC70A-SU

Region : China / Japan

| 6th/7th Generation Intel® Core™ Fanless Embedded System
| 4GB/8GB DDR4 memory onboard
| 1x 2.5" SATA 3.0 drive bay
| Supports 2 Mini PCIe for wireless application
| Rich I/O ports: 2 Intel GbE, 4 COM, 4 USB 3.0
| 15-Year CPU Life Cycle Support Until Q3' 30

Autonomous Patrolling

EC70A-SU/EC70A-KU

Region : Denmark

| 6th/7th Generation Intel® Core™ Fanless Embedded System
| 4GB/8GB DDR4 memory onboard
| 1x 2.5" SATA 3.0 drive bay
| Supports 2 Mini PCIe for wireless application
| Rich I/O ports: 2 Intel GbE, 4 COM, 4 USB 3.0
| 15-Year CPU Life Cycle Support Until Q3' 30

Warehouse Logistics

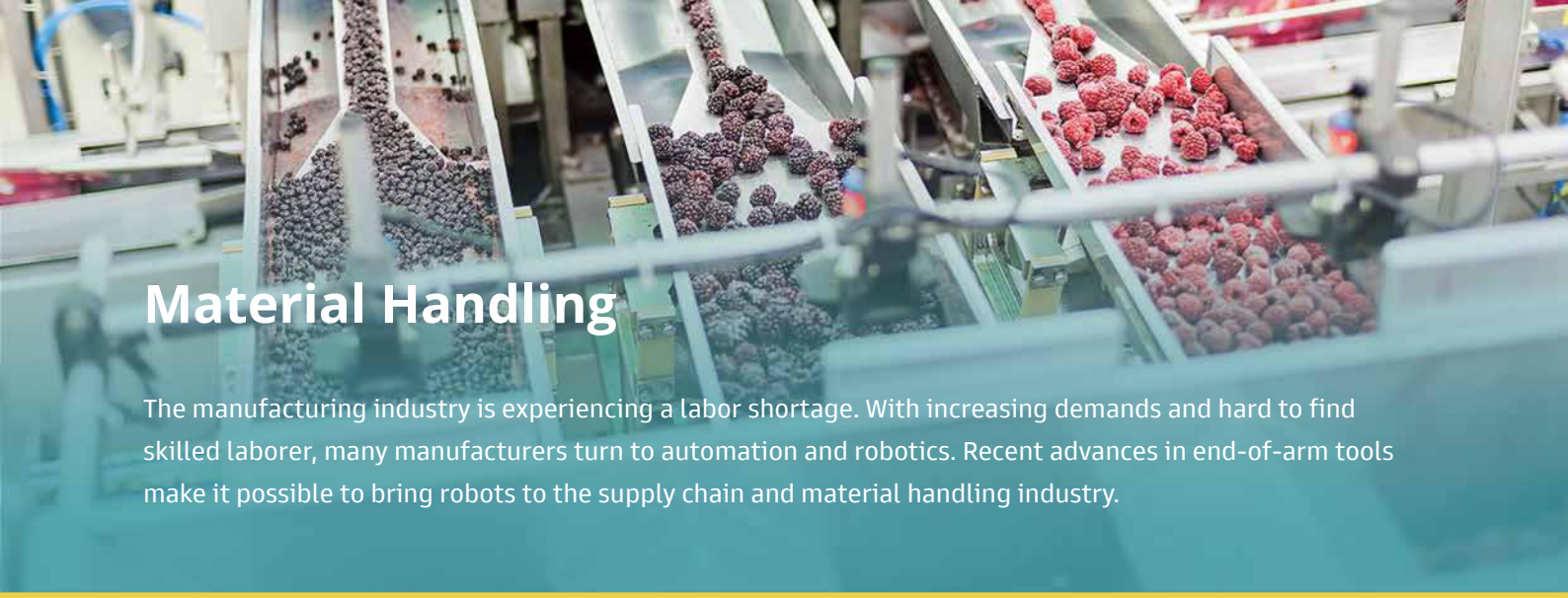
KSM-AL Serie

Region : Taiwan

| Power Management: Ignition On/Off and System On/Off Delay Time Control
| Auto Detect Boot-up & Shut-down Voltage for Low Power Protection
| Multiple Panel Sizes with Resistive/P-Capacitive Touch Screen
| 12V/24V/48V Ignition Power Control
| Support 12V/24V/48V DC Input
| Wide Operating Temperature
| IP65 Front Panel Protection

BenQ Business Solution

*Picture for reference purposes only.



Material Handling

The manufacturing industry is experiencing a labor shortage. With increasing demands and hard to find skilled laborer, many manufacturers turn to automation and robotics. Recent advances in end-of-arm tools make it possible to bring robots to the supply chain and material handling industry.

EC510/EC511-HD

Region : China

- 4th Gen Intel® Core™ Modular-Designed System
- Supports DDR3 SODIMM up to 16GB
- 2x 2.5" SATA drive bays
- 1 Vertical USB for securing data from unauthorized access
- 1 expansion slot: 1 PCIe x16 or 1 PCI
- 7-Year CPU Life Cycle Support Until Q3' 19

*Picture for reference purposes only.

EC510/EC511-HD will be regressed to EC510/EC511-SD, EC510 / EC511-KH, and upcoming EC510 / EC511-CS. For more details, please refer to the product pages on the DFI website.

EC510/EC511-SD

EC510/EC511-SD
https://www.dfi.com/product/index/127

EC510 / EC511-KH
https://www.dfi.com/product/index/1459

Desire for Innovation

SCARA (Selective Compliance Assembly Robot Arm)

SCARA robots were designed to mimic a human arm's action to automate assembly and/or loading and unloading with speed and precision. The idea is to get all the benefits of a human employee with a higher throughput and without fatigue.

DT122-SB/DT122-H61

Region : China

- 3rd/2nd Gen Intel® Core™ Desktop Box IPC with Intel® Q67/H61
- Supports DDR3 DIMM up to 16GB
- Up to 2x 2.5" or 1x 3.5" SATA drive bay
- 1 DVI-I, 1 VGA, 4 USB 2.0, 2 LAN, 2 COM
- Dual independent display
- 7-Year CPU Life Cycle Support Until Q4' 17

EC500-SD

Region : Swiss

- 6th/7th Generation Intel® Core™ with Intel® Q170
- Supports DDR4 SODIMM up to 32GB
- Three independent displays: 1 VGA + 1 DVI/HDMI + 1 HDMI/DP
- Rich I/O connectivity: 2 GbE, 4 COM, 4 USB 3.0, 2 USB 2.0
- 2 Mini PCIe slots support mSATA and Wi-Fi modules
- 15-Year CPU Life Cycle Support Until Q4' 30

EC700-BT

Region : China

- Intel Atom® Processor E3800
- 4GB/2GB DDR3L ECC onboard
- 1x 2.5" SATA drive bay
- Supports Wi-Fi, 3G/4G, and GPRS application
- Error Correcting Code (ECC) delivers a high level of data integrity, reliability, and system uptime
- 15-Year CPU Life Cycle Support Until Q1' 28

EC511-HD

Region : China

- 4th Gen Intel® Core™ Modular-Designed System
- Supports DDR3 SODIMM up to 16GB
- 2x 2.5" SATA drive bays
- 1 Vertical USB for securing data from unauthorized access
- 1 expansion slot: 1 PCIe x16 or 1 PCI
- 7-Year CPU Life Cycle Support Until Q3' 19

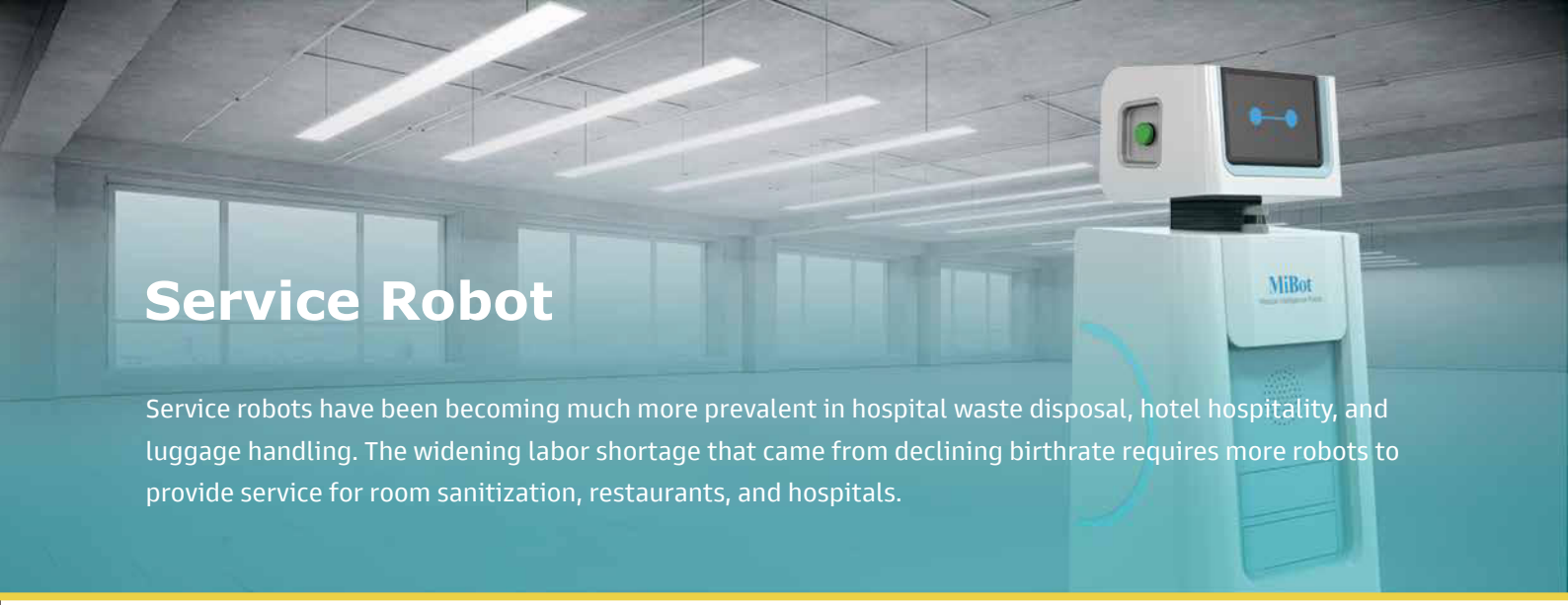
EC220

Region : Taiwan

- Intel Atom® Processor E3800 Modular-Designed System
- Supports DDR3L SODIMM up to 8GB
- 2x 2.5" SATA drive bays
- 1 Vertical USB for securing data from unauthorized access (optional)
- 2 expansion slots: PCIe x16 (x1 signal) and PCI expansions
- 15-Year CPU Life Cycle Support Until Q4' 28

*Picture for reference purposes only.

Desire for Innovation



Service Robot

Service robots have been becoming much more prevalent in hospital waste disposal, hotel hospitality, and luggage handling. The widening labor shortage that came from declining birthrate requires more robots to provide service for room sanitization, restaurants, and hospitals.

EC70A-SU

Region : China / UK

- 6th/7th Generation Intel® Core™ Fanless Embedded System
- 4GB/8GB DDR4 memory onboard
- 1x 2.5" SATA 3.0 drive bay
- Supports 2 Mini PCIe for wireless application
- Rich I/O ports: 2 Intel GbE, 4 COM, 4 USB 3.0
- 15-Year CPU Life Cycle Support Until Q3' 30

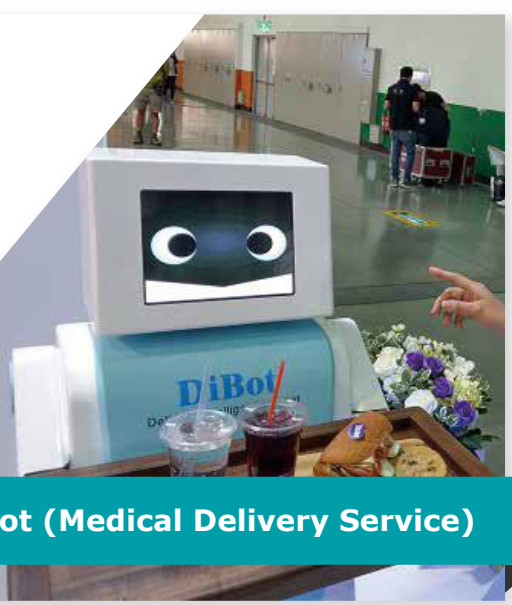
Room Sanitization

SU551

Region : Taiwan

- 7th/6th Gen Intel® Core™ 3.5" SBC
- Wireless communication: Mini PCIe
- Rich I/O: 2 Intel GbE, 4 COM, 4 USB 3.1 Gen 1, 2 USB 2.0
- 1 DDR3L SODIMM up to 8GB
- Three independent displays: VGA + LVDS + DP++
- 15-Year CPU Life Cycle Support Until Q3' 30

BenQ DiBot (Restaruant Service)



Qisda MiBot (Medical Delivery Service)

*Picture for reference purposes only.

Robot Management System

Besides the robot itself, the robot management system also matters. Compact design, low weight for fatigue-free operation, low power consumption for longer battery life, high performance to reserve software upgradability, and sophisticated I/O interface to enable the most versatile applications is necessary for the remote controller.

FS700

Region : Italy

- NXP i.MX 6 Series
- Rich I/O: 1 Intel GbE, 4 USB 2.0, 1 USB OTG
- Multiple expansions: 1 PCIe x1, 1 SATA 2.0, eMMC
- 1 HDMI, 2 LVDS
- 1GB/2GB DDR3 Single Channel Memory Down
- 15-Year CPU Life Cycle Support Until Q4' 27

*Picture for reference purposes only.

Learn More About Our Success Stories On Robot

- There are a few wonderful application cases on our website that are worth a look.

EC70A-SU/KU
AMR For Transportation
https://www.dfi.com/solution/successstory/49

EC511-SD
Bridge Crane For Foundry
https://www.dfi.com/solution/successstory/54

EC700-BT
Shuttle Between Shelves
https://www.dfi.com/solution/successstory/55

EC500-SD
AMR For IC Packing & Testing
https://www.dfi.com/solution/successstory/58

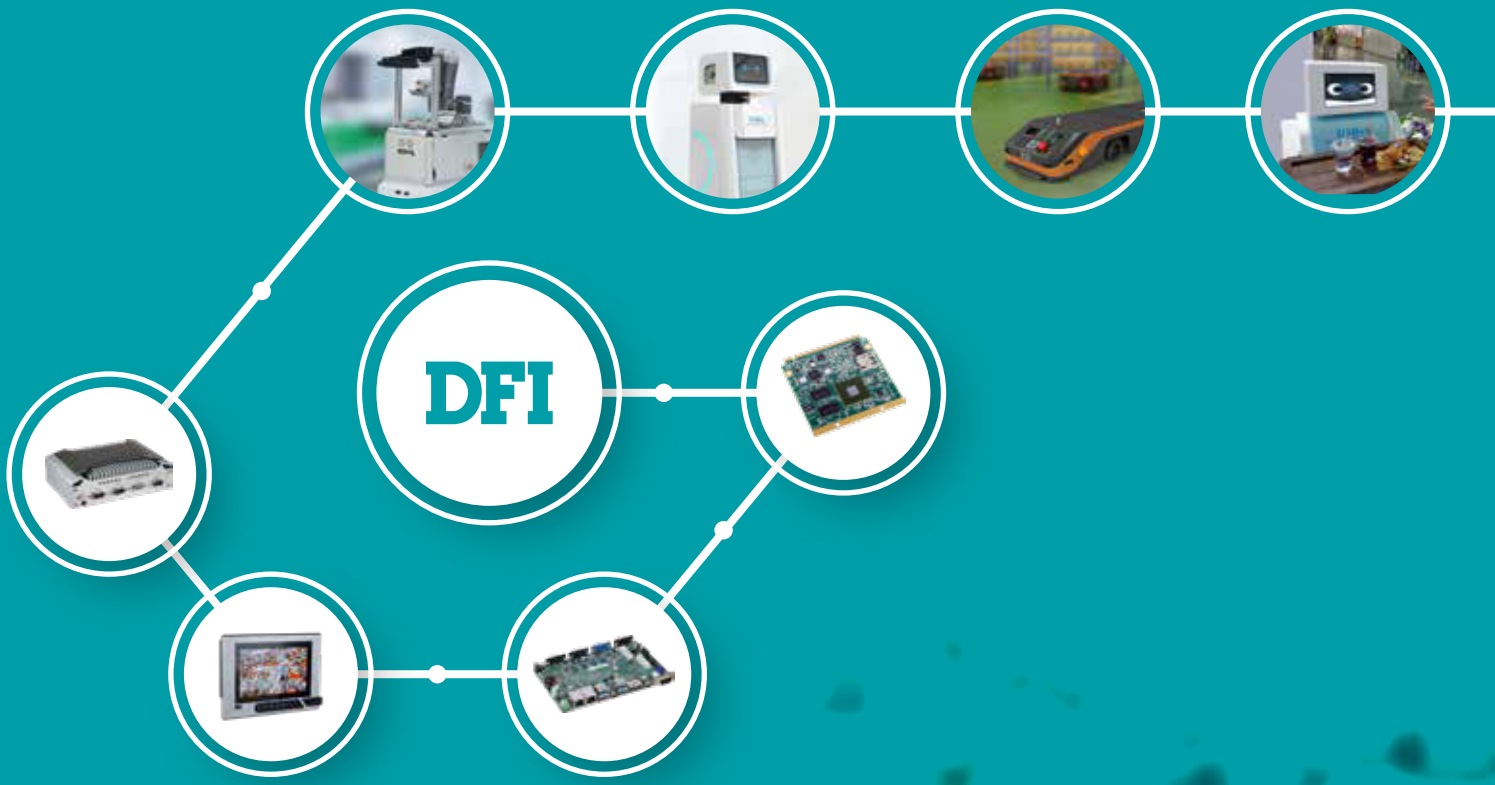
Desire for Innovation

Automatic Robot Solution

DFI Invites You To Come With Us To Robotics

Regardless of the industrial-grade hardware platform, DFI also provides comprehensive technical support, customized BIOS, and refined hardware specifications; allowing customers to create robots suitable for the Industry 4.0 environment.

Founded in 1981, DFI is a leading global provider of high-performance computing technology across multiple embedded industries. With its innovative design and premium quality management systems, 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, mission-critical, and intelligent retail. The development of automated robots will also be a new frontier for DFI to bring higher value to this industry.



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