DFI

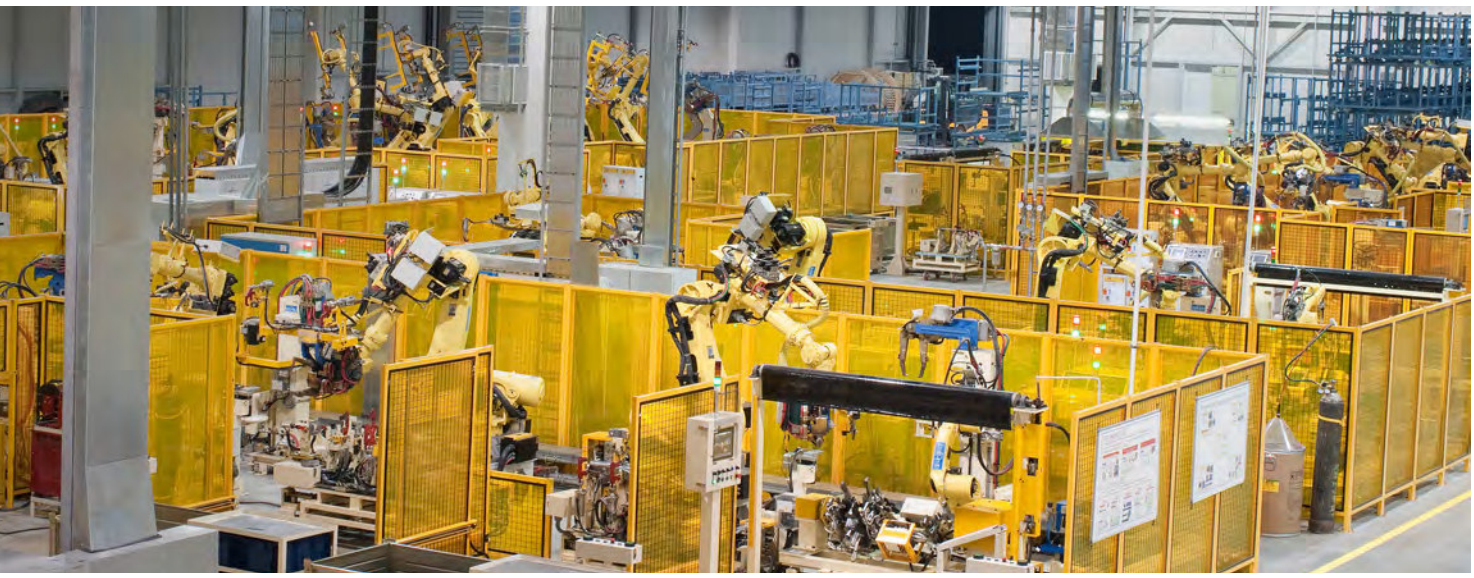
Enabling Industrial Robot Control with Rugged Qseven Module

DFI BT700 Module Trains Robots with Daincube DTP7-P Teach Pendant

A teach pendant simplifies robot programming, but the internal electronics must be high-performance, low power and ready to withstand the harsh conditions of a factory floor. When producing their DTP7-P teach pendant for industrial robots, Daincube chose the DFI BT700 Qseven System-On-Module (SOM) based upon the Intel Atom® processor. Daincube is a leading manufacturer of industrial robot controllers, including teach pendants, robot motion controllers and safety controllers. The Daincube teach pendant is differentiated by its ergonomic design and adaptability to a wide range of automation applications.

Company: Daincube
Country: South Korea
Industrial: Robot Motion Control
Application: Smart Teach Pendant

BT700



The Challenge

Programming a robot with manual instructions is time consuming and requires significant debug. Further, it is difficult to achieve 100 percent accuracy of movement in 3D space. The most widely used method is to utilize a handheld device called a teach pendant. Similar to a touchscreen tablet, the teach pendant enables the operator to move the robot through a desired range of motion. When a sequence has been fully specified, the robot can play back the programming at full speed.

The Daincube teach pendant is designed for use in semiconductor, plastic injection, food, electronics, automotive and machine vision applications. The underlying electronics of the Daincube teach pendant must support many integrated functions including a keyboard, a 7-inch touch-screen display, and Windows or Linux. Daincube discovered that a preliminary design using an ARM CPU proved lacking — the device requires a higher performance processor while still dissipating less than ten watts.

The Requirements

The teach pendant device must be reliable and resilient in order to survive in an industrial workspace. Its internal electronics should have a high MTBF and be able to operate in industrial temperatures without requiring fan cooling. To work comfortably as a handheld device, the teach pendant needs to weigh around one kilogram and be able to achieve a CE mark and other industrial certifications.

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DFI Solution

The DFI BT700 Qseven System-On-Module (SOM) is based on the low-power and highly-integrated Intel Atom® E3800 processor, aimed at striking a balance between high performance and low power for industrial automation applications. The E3800 is the first Intel system-on-chip (SoC) designed for intelligent systems, delivering outstanding compute, graphics, and media performance while operating in an extended range of -20°C to +70°C or more with no fan. DFI's reliable BT700 is equipped with industrial-grade components to ensure longer MTBF and incorporates Intel® HD Graphics, dual high-resolution displays, audio, Gigabit Ethernet, SATA 2.0, up to 32 GB eMMC, an SD interface and a Trusted Platform Module (TPM) for secure applications. BT700 mounts on a carrier board to provides I/O connectors and additional expansion capabilities. Customers may also work closely with DFI technical support to design a custom carrier board. When designing the teach pendant solution, Daincube quickly and seamlessly designed a compatible carrier board with application-specific features. The rugged BT700 module, certified by CE and FCC Class B, addresses a range of embedded applications including industrial control, factory automation, and robotic arm terminal to greatly optimize the operation.

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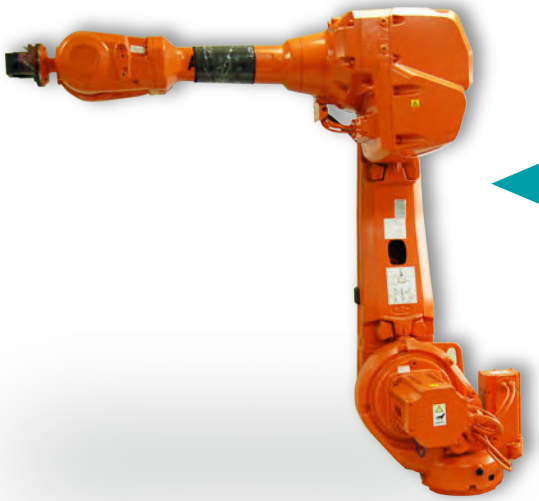


Robotic Arm

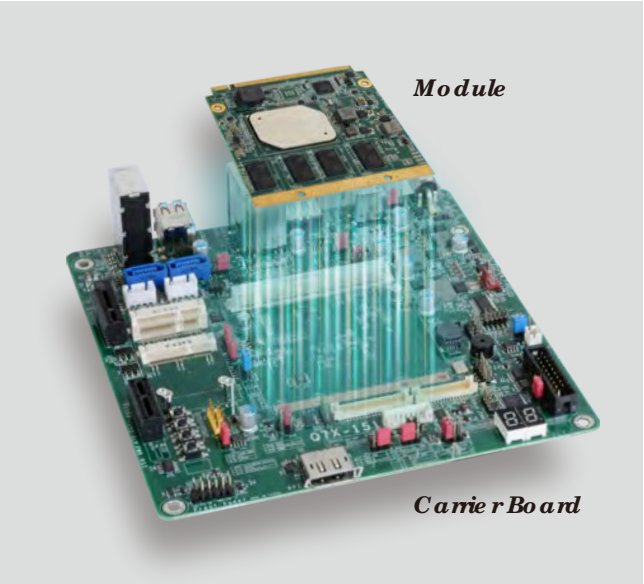
Smart Teach Pendant

Intel Atom® Processor E3800 Series
2GB/4GB DDR3L Memory Down
1 LVDS, 1 DDI
3 PCIe x1
1 Intel GbE, 1 USB 3.0, 6 USB 2.0

Intel Atom® Processor E3900 Series
4GB/8GB DDR3L Memory Down
1 DDI, 1 LVDS/(eDP + DDI)
4 PCIe x1
1 Intel GbE, 3 USB 3.0, 8 USB 2.0

DFI Qseven Series

The Qseven series from DFI is a 70mm x 70mm (2.76" x 2.76") SOM form factor that integrates functionality commonly used in digital signage, interactive kiosks, gaming, industrial automation, aerospace, medical, transportation, network security, and other volume applications. Based on low power Intel Atom® or ARM-based SoC processors supporting wide temperature, Qseven modules mount on an application-specific carrier board using the high-performance MXM connector. The Qseven series is available with extended life-cycle support, revision control, application integration services and DFI's industry-leading technical support. DFI offers a comprehensive product line of board products, systems and related services for all of your embedded computing needs.



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.

Website: www.dfi.com

eStore: estore.dfi.com

For more information, please contact your DFI regional sales representative or send us an email: inquiry@dfi.com