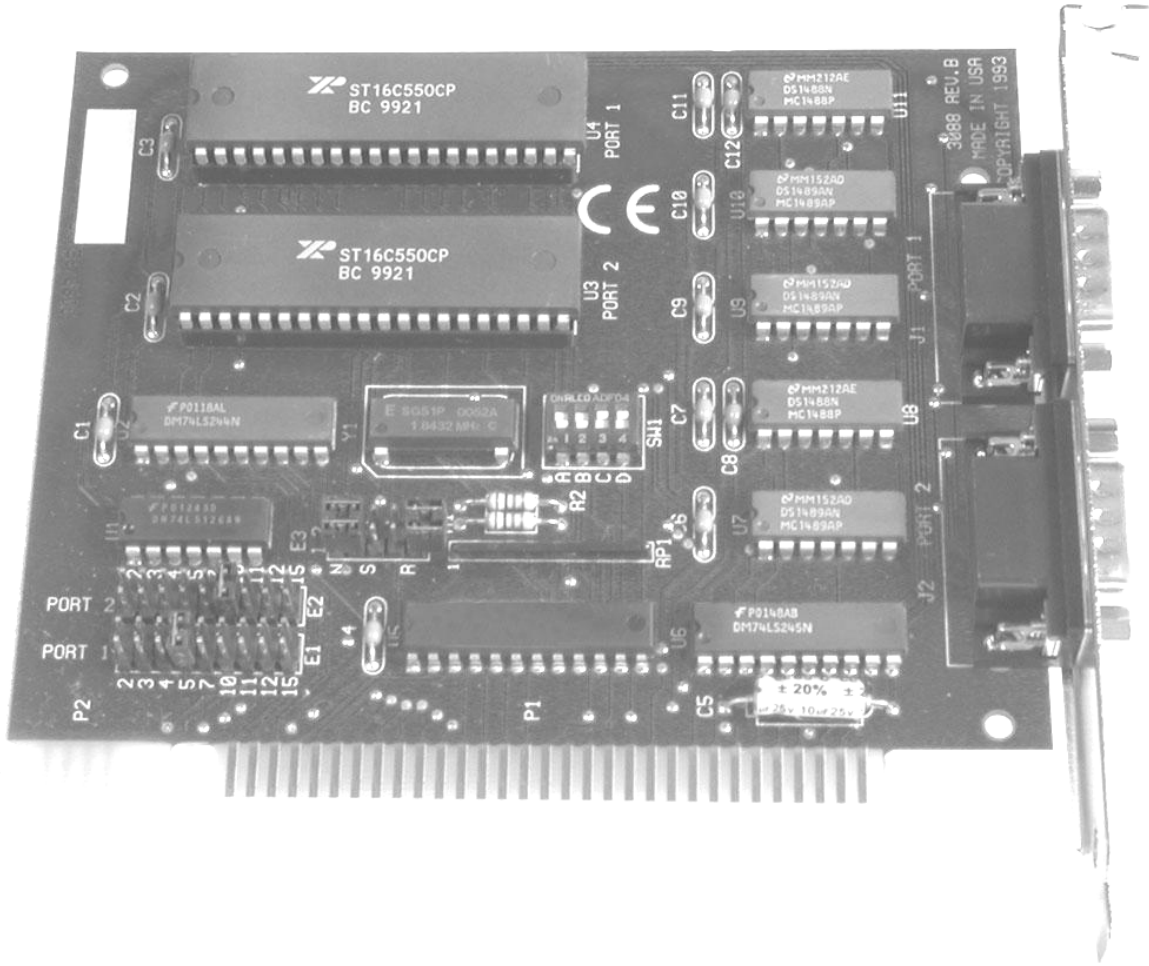


## ISA Computers Whitepaper: How to Keep Your ISA Devices Running



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## Introduction

ISA systems have served the world of telecommunications, manufacturing, aerospace, military and research applications since the mid-1980's. Many current systems have been designed around ISA infrastructure.

As these systems mature, newer card interface types displace old standards, resulting in research and development lead time. IT professionals and system managers must carefully consider their options regarding upgrading old ISA cards or designing entirely new systems in such a way to satisfy budgetary and design requirements while resulting in minimal system downtime.

New advances in industrial computing, such as operating system upgrades, processor innovations and driver support often result in conflicts with older ISA data acquisition device cards, while a full system redesign may force old ISA cards into early retirement, requiring new card design. A major advantage of upgrading computing hardware with an ISA specialist is the ability to use your existing device cards in a long-life environment with sustainable architecture.

Keeping your ISA devices in an ISA-compatible system offer:

- Maximum Cost Savings
- Avoid Rewriting Drivers
- Expansion Flexibility
- Proven, Serviceable System Architecture
- Faster Deployment with Reduced Downtime

## Considerations for Upgrading ISA Systems:

### -CPU Compatibility

Changes in technology doesn't only add new features, it can also remove older ones. Choosing a proper motherboard and CPU to host your ISA Legacy Device Card is of the utmost importance. Newer processors may not be able to properly interface with your card. We recommend Pentium 4<sup>®</sup> CPUs for ISA applications.

### -Operating System Considerations

Newer operating systems often have problems with old acquisition hardware and drivers for older devices may not exist. Microsoft called for a shift from ISA and discontinued support in 1999. It is important to work with an ISA expert that has access to legacy licenses such as Windows 98. Many new chipsets will not run a Win9x OS. Windows Vista and Windows 7 will not natively support ISA slot drivers.

### -Expected Lifetime

Newly configured ISA Systems are not future-proof. They are to be considered a stop-gap measure to prolong the life of aging Legacy Data Acquisition devices. It's quite possible to get several more years of service from your existing infrastructure, but there is no single magic bullet to achieve this and it will always be dependent on the required device, drivers, and system requirements. ISA-compatible boards with PCI slots offer an ease of upgrade when the ISA device is at the end of its life cycle.

### -Conflicts

Conflicts with other devices are common. A device may have been configured on an open address or IRQ at the time of

original configuration, only to find itself in conflict after a hardware change or software update. An ISA expert can often help you navigate your BIOS settings to ensure the device's requests are reaching the CPU.

### **Case Study: Keeping ISA Devices on the Floor?**

A client in the government-contracted energy sector recently faced a serious system challenge. The company was running dozens of systems on SCADA (Supervisory Control and Data Acquisition), each communicating via old Allen Bradley KT Ethernet cards that were in conflict with an IDE controller on IRQ 15. A system redesign and full upgrade would have solved their problem, but at a cost of tens of thousands of dollars and significant system downtime.

By replacing hardware with major consideration for the system specifications, the individual ISA device cards assignments, and the system software, the client was able to resume their normal system operations with minimal downtime and significant savings. The new systems offered both ISA and PCI expansion on the motherboard, allowing the company to shift to PCI Ethernet when they choose.

### **Conclusion**

The ISA interface is still a valuable piece of many industrial systems. By keeping ISA devices active a system manager can often prolong the life of their existing infrastructure while benefitting from the reliability and serviceability of current industrial computer systems at a significant cost savings versus a system redesign.

## **About DuroPC**

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**Addendum: ISA Printable Checklist**

<b>ISA Checklist</b>	
What address is your device at?	
What IRQ is your device at?	
# of ISA Slots per System Needed:	
# of Systems Needed:	
Does ISA board require -5VDC from the power supply?	
Does the ISA board require an IRQ to be reserved in BIOS?	
Should there be an I/O DMA Resource reserved?	
Does the 15-16 MB hole need to be punched out?	
What type of board is the ISA board?	
What OS is the ISA board currently working on?	
What is the ISA board's manufacturer and model numbers?	