An OEM Customer approached ICP DAS with the need of a **20-Axis Motion Control System**, with **250+ I/O Points**. The customer stressed that reliability and precise control were the main attributes needed for a successful integration. ICP DAS chose to integrate a multifaceted approach; allowing robust and reliable control, and environmental resilience contained in a user friendly platform.

ICP DAS decided to implement **I-8094**: High Speed, **4 Axis Stepping / Pulse type Servo Motor Control Module**; their newest motion control module because motion control was the most pertinent element of the application. It can be used in conjunction with any of the ICP DAS I- 8000, Wincon, and Lincon series programmable automation controllers, and is suitable for almost any motion control application.

ICP DAS drastically cut down the amount of devices needed to perform the full 20-axis motion control by implementing the I-8094 Motion Controller. With just five I-8094 modules installed, all 20 axes were capable of independent control, while maintaining a compact, modular footprint.

ICP DAS used the **I-8430 rack mount PLC controller** to not only house the motion control modules, but also handle embedded control and high speed digital data acquisition. With a robust controller in place, ICP DAS chose to implement their new line of FRnet products to handle the requirement for the high speed digital signals. **FR-net** is an innovative industrial field bus, capable of high speed deterministic control, real I/O synchronization, non-protocol communication, and much more. By implementing the FR-net I/O infrastructure, ICP DAS enabled transfer speeds of up to 250 kbps per 2.88ms; thus offering superior high speed data analysis.

**Click here** to read the full application story.

**FAQ of the Week**

**Q:** What is FRnet?

**A:** FRnet is a two-wire serial communication bus wired similar to RS-485. FRnet device communication is achieved using a multi drop method. This new method does not use the question/answer approach like many RS-485 communication methods. Instead, it uses fixed scan time to actively transmit data. Since there's no need for a CPU to process communication protocol, FRnet can achieve high-speed data transmission in an isochronous manner. [Click here](#) to read more about FRnet.
**Do You Have an Application Story to Share with Us?**

Click here to share your story with ICP DAS USA! We would love to hear about your product implementations.

Click here to read our comprehensive list of application stories. They are downloadable in .PDF format.

Click here to contact our Technical Support Engineers so we can assist you!

Click here to take a look at our product support & documentation on our web page.

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**September 2007**

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**Featured Product**

16 Port Isolated Digital Input Distributed I/O Module

**FR-2053:** $155

![Add to Cart](image)

FR-2053 provides a 16 channel isolated photo-coupler digital input in the FRnet. I/O data transmission is controlled by the FRnet control chip (developed by ICPDAS). It was designed to provide deterministic high speed network communication. Anti-noise circuitry has been built into the FRnet control chip to ensure communication reliability.

**FR-2053 Features**

- High Transmission Reliability
- No software overhead on protocol
- Simple synchronization mechanism
- Isochronous DI/DO processing
- DIN-Rail mountable
- Supports broadcasting (1: n data transmission)
- Power consumption: 2.0 W (Max.)
- Operating temperature: 0°C to 55°C Storage
- Storage temperature: -20°C to 65°C
- Operating humidity: 35% to 85% (non condensing)

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**High Speed FRnet Equipped Embedded Ethernet Controller**

**I-7188EF-016:** $450

![Add to Cart](image)

I-7188EFH-016 offers users a multitude of connectivity and networking options in a compact and robust embedded control format. FRnet communication is a determinant of real time. It's extremely fast for central control or distributed I/O control. Wiring is fast and easy via two twist wires which saves money on cabling and installation.

**I-7188EF-016 Features**

- Programmable in C Language
- Supports a variety of TCP/IP features, including: TCP, UDP, IP, CMP, ARP, RARP
- Internal expansion bus allows for multiple capability configurations
- Remote Configuration
- Communication Speed: 1Mbps
- Real Time Clock
- Innovative Token-stream communication technology
- Built-in self-tuner ASIC controller on RS-485 port
- +10 ~ +30V DC voltage requirement
- Operating temperatures: -30°C ~ +55°C

*Offer not valid for resellers and distributors.

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**Quick Start Kits**

Click here to see our Quick Start Kits: the ideal starting point for application specific projects! ICP DAS USA quick start and learning kits provide a revolutionary way to decrease development time in one easy to use package!