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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.

Featured Application Story

Inert and Vacuum Furnaces, each with varying thermocouple types, vacuum gauges, and strain gauges.

Combinations of the I-7019R and I-7018Z modules have been installed-- one for each furnace to measure type C, K, F, and R thermocouples from the control, furnace, and multiple sample thermocouples.

RS-485

USB

I-7019R I-7019R I-7019R I-7019R I-7019R

I-7018Z I-7018Z I-7018Z I-7018Z

NASA Inert and Vacuum Furnace Application

ICP DAS USA recently had the opportunity to help NASA, the National Aeronautics and Space Administration with a very exciting application. Some NASA researchers were developing high temperature materials for both the aeronautics industry and for deep space flight. Accurate measurement and repeatability of their experiments was critical in fulfilling their mission. For that reason they chose to use data acquisition modules from the **ICP DAS I-7000 series**. They said not only are these modules extremely cost effective, but they also have more functionality than competing products. Their ease of implementation into our existing test frame setups has had a large impact on the standardization of the **ICP DAS I-7000 series** being implemented into many NASA labs.

Before they learned of ICP DAS modules, researchers in their group used varying brands of D/A modules and software from different vendors, as well as manual readings to log data from their research projects. The need was evident for a new standardized system that could be implemented throughout their labs in order save researcher's time and money. The challenge was to design a flexible and reliable data acquisition network that any researcher could customize, expand, and operate with minimal experience.

Two of the major labs that they have implemented ICP DAS modules in are the Heat Treatment Facility and the Creep Testing Lab. These facilities consist of a number of different inert and vacuum furnaces, each with varying thermocouple types, vacuum gauges, and strain gauges.

An existing D/A software package developed by NASA was modified to use the DCON protocol to communicate with the **I-7000 series**. Combinations of the **I-7019R** and **I-7018Z** modules have been installed -- one for each furnace to measure type C, K, F, and R thermocouples from the control, furnace, and multiple sample thermocouples. The ability to easily log channels of different types from a single ICP module along with the durability and ruggedness of these modules was important in our decision. [Click here](#) to read the full story.

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.



Featured Product



Wincon + I-8172 (2 Port FRnet Interface Module)

W-8x49: \$1770

I-8172: \$275

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Add to Cart

Our [WinCon](#) Programmable Automation Controllers (PACs) can use the I-8172 FRnet communication module to implement a FRnet network. The [I-8172](#) is an isolated FRnet communication controller. It has two FRnet ports.

I-8172 Features

- Each FRnet port can control a maximum of 16 communication nodes.
- Each single node of the remote I/O module can control a maximum of 16 DI/DO channels
- Each FRnet port can control a maximum of 128 DI and 128 DO channels.
- **Cyclic Scan Time:**
 - 128 input/128 output points@2.88 ms
- Communication Distance: 400m max
- Communication Speed: 250Kbps
- Wire Cable: (shielded) Twisted-pair cable
- Power Consumption: 1.25W Max.
- **Environment**
 - Operating Temperature: -25°C ~ +75°C
 - Operating Humidity: 10% ~ 90% RH, non-condensing
 - Storage Temperature: -30°C ~ +85°C
 - Storage Humidity: 5% ~ 95% RH, non-condensing

September 2007



**High Speed FRnet Equipped Embedded Ethernet Controller
I-7188EF-016: \$450**

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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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