

By Jean-François Brousseau, Product Manager, Industrial and Scientific Division

The IQS-500 Intelligent Test System was designed to meet the requirements of automation and to facilitate integration with your test environment. This document will demonstrate how the IQS-500 can be integrated into your own test setup. Configuration descriptions will help you understand the concepts and technology behind EXFO's approach.

While reading the following examples, remember to keep in mind these basics about the IQS-500 Intelligent Test System.

- An IQS system always requires an IQS controller (IQS-505P or IQS-510P)
- IQS controllers are built around an industrial Pentium III computer, based on Windows 2000™

## GPIB

The General Purpose Interface Bus (GPIB) is probably the most commonly used interface for controlling several instruments at once. With the GPIB option, which meets the IEEE 488.2 standard, the IQS-500 can be used as an instrument within a GPIB chain. Furthermore, with only one GPIB address, you can control up to 100 optical instruments using the second-level addressing method as defined in the IEEE 488.2 standard.



Figure 1. Typical GPIB Configuration

To facilitate the development of your GPIB network, EXFO supplies SCPI commands and LabVIEW™ drivers for all available instruments.

## Ethernet

A 10/100 Base-T interface is standard on all IQS-500 controllers, which allows you to connect your platform directly to your company's Local Area Network (LAN) or Wide Area Network (WAN). This gives you the opportunity to share network resources or to remotely control your instrument. For example, you may use this connection to transfer data from your test stations to a common database, thus centralizing your information, facilitating performance monitoring and providing better control of the production floor.

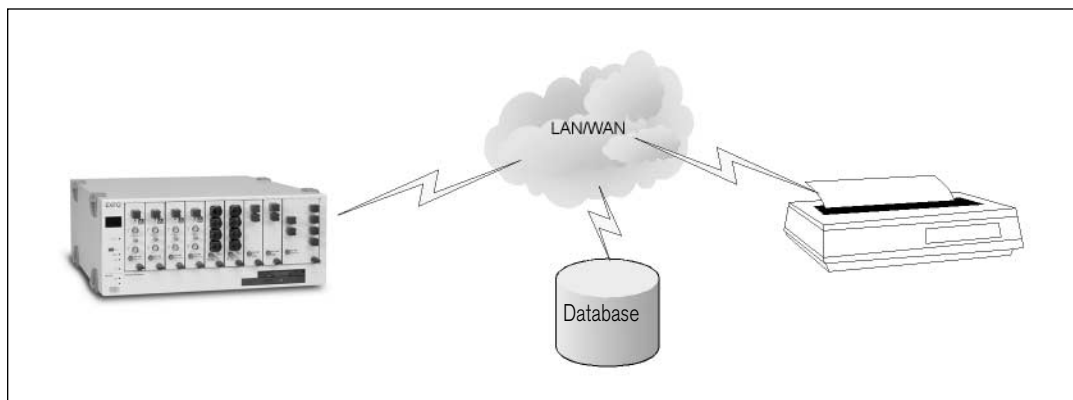


Figure 2. Using the IQS System over a LAN/WAN

EXFO supplies DCOM libraries for all of the instruments that can be used with the IQS-500 Intelligent Test System. These libraries facilitate remote control over your LAN, allowing you to develop PC-based applications to communicate directly with the IQS-510P or IQS-505P. This feature offers you great opportunities in terms of remote-process monitoring and control.

## RS-232

The RS-232 is probably the most common way to control an instrument remotely. However, this interface limits the number of stand-alone instruments to one, but with the IQS-500, you may still use this link to control up to 100 optical instruments. EXFO still supports this configuration for specific applications. However, to increase performance and speed, we recommend running the application directly on the IQS-510P through ActiveX.

RS-232 is an American standard, part of the Electronic Industries Alliance (EIA) and the American National Standards Institute (ANSI), and is internationally recognized by International Consultative Committee on Telephony and Telegraphy (CCITT) and ISO standards. The RS-232 was developed to cover the connection between Data Terminal Equipment (DTE) and a "modem", which was formerly called Data Communication Equipment (DCE). In most test equipment, this is the type of configuration used, since the computer considers the instrument as a peripheral.

In the case of the IQS-510P, it is slightly different because it is a communication between two computers (DTE/DTE communications). For this reason, you must use a null-modem cable to establish the connection between the two (EXFO's part number GP-216). The table below lists the pinouts that should be used to establish the connection between a computer and an IQS-500 controller.

	D-Sub 1	D-Sub 2	
DSR	6	4	DTR
TxD	2	3	RxD
RxD	3	2	TxD
DTR	4	6	DSR
GND	5	5	GND
RTS	7	8	CTS
CTS	8	7	RTS
RI	9	9	RI
DCD	1	1	DCD

Figure 3. Null-Modem Pinout (EXFO GP-216)

The use of a null-modem cable to support DTE/DTE communications is basically transparent to most software. However, some minor adjustments might be required on some software. Refer to the software manual if you encounter difficulties.

## Local Applications

Based on the COM technology, the ActiveX allows software to communicate within a Microsoft environment. This technology allows you to develop an application that will run locally on the IQS controller within the Windows 2000 environment. When speed and performance count, this is the best approach, given that you don't need to go through a physical connection that slows down the process. ActiveX transmissions are supported by most development software on the market.

## System Management with IQS Controllers

The IQS controller's powerful Pentium III 866 MHz processor provides you with all the latitude required to use it as the system manager of an automated test setup that can include any third-party instrument. Using this configuration can lower your per-system costs, as you no longer need a stand-alone computer to control your setup.

The IQS controller can be used as a GPIB or RS-232 system manager. Moreover, an IQS-500 controller can be used to control another IQS-500 controller over your Ethernet network. Your application can either be developed using LabVIEW™, C++™, Delphi™, Visual Basic™, or any other language that runs under Windows 2000.

Thanks to its standard industrial PC architecture, other third-party PCI format cards could also be integrated into the IQS-500 to better match your needs. For example, by using such devices you can transform your IQS controller into a PXI controller. If you have special requirements, do not hesitate to contact us for more information on the IQS-500 Intelligent Test System's flexibility. Our engineers will be pleased to help you develop a custom solution.

Corporate Headquarters > 400 Godin Avenue, Vanier (Quebec) G1M 2K2 CANADA | Tel.: 1 418 683-0211 | Fax: 1 418 683-2170 | info@exfo.com

Toll-free: 1 800 663-3936 (USA and Canada) | [www.exfo.com](http://www.exfo.com)

EXFO America	4275 Kellway Circle, Suite 122	Addison, TX 75001 USA	Tel.: 1 800 663-3936	Fax: 1 972 836-0164
EXFO Europe	Le Dynasteur, 10/12 rue Andras Beck	92366 Meudon la Forêt Cedex FRANCE	Tel.: +33.1.40.83.85.85	Fax: +33.1.40.83.04.42
EXFO Asia-Pacific	151 Chin Swee Road, #03-29 Manhattan House	SINGAPORE 169876	Tel.: +65 6333 8241	Fax: +65 6333 8242
EXFO China	Beijing New Century Hotel Office Tower Room 1754-1755 No. 6 Southem Capital Gym Road	Beijing 100044 P. R. CHINA	Tel.: +86 (10) 6849 2738	Fax: +86 (10) 6849 2662