

I-7188E

Ethernet to Serial Converters

Description

The I-7188E Series Internet Communication Controllers are addressable Ethernet-to-Serial Converters that can be used to control one or multiple serial devices from any Lan or Internet network. The I-7188E series Controllers provide multiple RS-422/RS-485 and RS-232 COM ports with baud rates up to 115.2 kbaud. Some models include 4/4 digital I/O lines for controlling external relays or for sensing external signals. Software is provided that virtualities the I-7188E serial I/O ports as a COM port in any PC making it easy to control the I-7188E ports from a PC program. A unique software concept called Xserver lets you convert an I-7188E Controller into a web server so that it can be accessed and controlled by any HTML browser like IE, Netscape and Safari.

Why Ethernet

Ethernet has become the defacto standard for local area networks. The common Ethernet protocol is the TCP/IP standard which operates at 10 MHz, 100 MHz and 1 GHz over many different types of media. Connectivity is almost everywhere, in factories for linking all kinds of equipment, in offices to interconnect PCs, printers, servers etc. and now even in homes for linking two or more PCs to a printer and to the Internet. Access hubs can be easily installed along the network to provide additional device connections. This makes it appealing to use the network's connectivity to control remote devices over the network.



I-7188E2

I-7188E Applications

The I-7188E series Controllers are available in many different configurations that lend themselves to a wide variety of applications. The simplest version has an RS-485 port and a RS-232 port for controlling a single remote serial device over your local network. Multiport versions let a single I-7188E control multiple RS-232 or RS-422/485 devices from one IP address. Models with 4 digital inputs and 4 digital outputs can control external devices such as relays or report external signal levels. The included VxComm software virtualizes the I-7188E's COM ports (1-8) into unused COM ports in a PC. This provides access to the I-7188E's remote COM ports from any Visual Basic, C/C++ or other programs like Excel that can access a PC's COM port.

- Converts serial devices or RS-485 networks to Ethernet protocol. *Control serial devices directly from your network.*
- Standard baud rates up to 115.2 kbaud. *Handles the highest speed serial devices.*
- 1 to 7 RS-232 ports plus an RS-422/RS-485 port. *Your choice of interfaces.*
- Adds remote serial ports to your PC. *Overcomes the limited COM ports on your PC.*
- Embedded processor and Xserver programs converts the I-7188E into a web server. *Access the I-7188 and serial devices from any HTML browser.*
- Mounts on standard DIN rail. *Easy mounting and replacement.*
- Easy network control with Setup Wizard and VxComm driver. *Sets IP Address and Assigns devices to a virtual COM port.*



Popular I-7188E Configurations

Model	RS-485 Port	RS-232 Port	RS-422/485 Port	Digital I/O 4/4	Display
I-7188E2	1	1	-	-	None
I-7188E3	1	1	1	4/4	None
I-7188E3-232	1	2	-	4/4	None
I-7188E4	1	3	-	-	None
I-7188E5	1	4	-	-	None
I-7188E8	1	7	-	-	None



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I-7188E Applications cont'd

A unique Xserver program running in the I-7188E converts the I-7188E into a programmable server that can be accessed by any HTML compatible browser. This greatly increases the capability of the unit and lets it do multiple tasks from one command. The basic Xserver software is included with each unit and comes with a demo program for controlling the digital I/O lines. The user can easily add commands to the Xserver program for his own application.

Other ICP modules can be used in conjunction with the basic I-7188E to add analog I/O, temperature sensing and other data acquisition and control functions. Expanding the I-7188's capability with external modules lets you create many different types of control systems and allows it to replace a PLC and other controllers.

Self-Tuning RS-485 Port

A conventional RS-485 network has all of its devices set to the same baud rate and data format. This is often a compromise as the newer faster devices are forced to communicate at the pace set by older slower devices. The Self-Tuner chip in the I-7188E series modules is designed to solve this problem. This allows the devices on the RS-485 network to run at their best speed and format.

DIN Rail Mounting

The I-7188E series Controllers mount on the industry standard DIN rail. This makes them easy to mount and to remove and replace if serving is ever required. DIN rails are available for single units as well as for multiple modules. Each I-7188E Controller includes a single unit DIN rail.

Typical Connections

The easiest I-7188E connection is made by plugging the I-7188E into an Hub on the local LAN as shown in Figure 1. Use the Configure Wizard to set the I-7188E's IP address. Use the VxComm Utility to map a virtual COM port in the PC to the I-7188E's COM port. The VxComm Driver then lets existing programs that communicated with the serial device when it was connected to a PC COM port, communicate to the

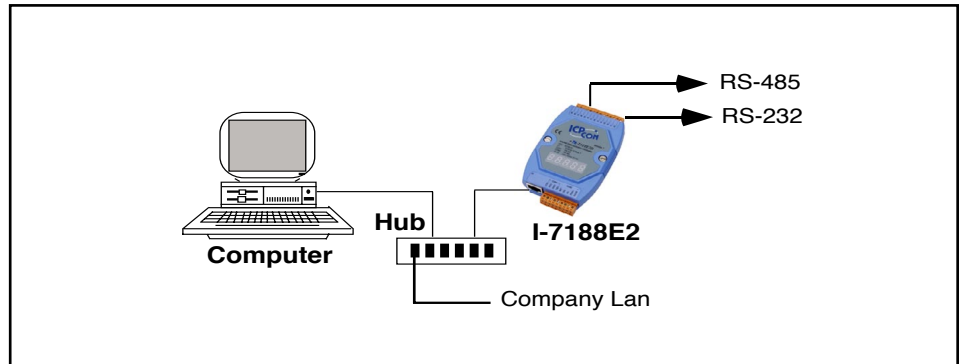


Figure 1 I-7188E2 Connected to Local LAN

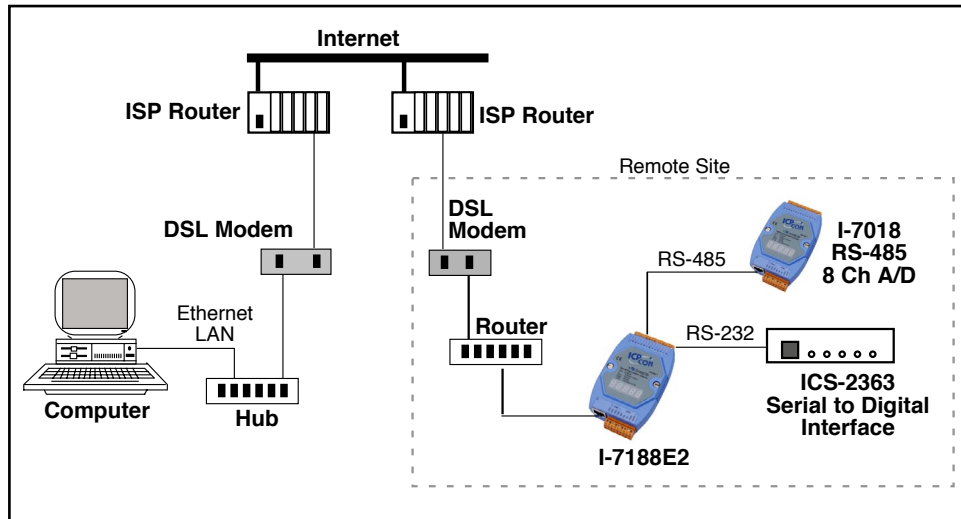


Figure 2 I-7188E2 and Remote Devices Controlled over the Internet

same device over the local LAN by just changing the COM port number.

Locating the I-7188E in a remote location is a more complex connection. Figure 2 shows a typical remote application where the I-7188E is being used to drive a I-7017 Eight channel A/D and an ICS 2363 Serial-to-Digital Interface. For a remote application you obtain a fixed IP address from your ISP provider and use that information for the I-7188E's IP, Mask and Gateway settings. Multiple I-7188Es require multiple IP addresses. Consult your network engineer for security and hardware issues.

LED Display Option

The I-7188E series can be delivered with a an optional 5 digit LED display that can be used to show the status of the module, its IP address and serial port configuration settings. Models with the display are noted with a D after the part number.

Other I-7188E Modules

The following list shows the complete ICPI-7188 Module family. All of the units can be ordered with the display option by appending a D to the model number, i.e. I-7188E2 becomes I-7188E2D. The display can be used to show baud rates and other diagnostic information.

Model No.	Description
I-7188E1	1 RS-232
I-7188E2	1 RS-485, 1 RS-232
I-7188E3	1 RS-485, 1 RS-232, 1 RS-422/485
I-7188E3-232	1 RS-485, 2 RS-232
I-7188E4	1 RS-485, 3 RS-232
I-7188E5	1 RS-485, 4 RS-232
I-7188E8	1 RS-485, 7 RS-232

Contact ICSDataCom to order any ICP Ethernet to Serial module.

I-7188E SPECIFICATIONS

Serial Interfaces

RS-232 Interfaces are full-duplex and include data and handshake signals

Signals	TX, RX, RTS, CTS,
Baud Rates	Std Windows rates up to 115.2 kbaud
Data Bits	7 or 8 bits
Parity	None, odd or even
Stop bits	1 or 2
Flow Cntl	Hardware or None RTS output high to receive CTS input high to transmit

RS-485 Interface is half-duplex and includes self tuner and network protection

Signals	TX/RX pairs
Baud Rates	Std Windows rates up to 115.2 kbaud.
Data Bits	7 or 8 bits
Parity	None, odd, or even
Stop bits	1 or 2
Distance	1200 M

Buffer Sizes

TX Buffer	128 bytes
RX Buffer	128 bytes

Ethernet Interface

Addressable Ethernet port

Type	10Base-T
Protocol	TCP/IP
Features	TCP, UDP, IP, ICMP, ARP and RARP
Connector	RJ-45
Address range	192.168.0.0 to 192.168.255.255
Clients	13 simultaneous clients using 2 sockets/client.

Embedded Processor

CPU	AMD 188ES, 40 MHz
SRAM	512/256 kbytes
Flash ROM	512/256 kbytes
EEPROM	Included
IO Exp Bus	EX Models only
Watchdog	Included
Power Protect	Included
OS	MiniOS7
Serial Number	64 bit EX models

Included Software

Configure Wizard - Graphical setup program for setting IP address and serial port parameters.

VxCOMM - Virtualizes I-7188E ports as PC COM ports.

Systems	Windows 95/98/Me/ NT/2K and Windows XP Linux
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Xserver Compilers

Xserver can be modified with the following compilers:

BC++ 3.1
MSC
MSVC (before version 1.5.2)
TC 2.01 (Borland)
TC++ 1.01 (Borland)

DIO Lines (I-7188E3)

Inputs	4 lines
Low	0 to 1 Vdc
High	3.5 to 30 Vdc
Outputs	4 open collector
Low	1 Vdc max @ 100 mA
High	5- 30 Vdc

Physical

Size	123 x 72 x 33 mm (without mounting bracket)
Display	5 digit LED display or single LED
Connectors	Ethernet RJ-45 Serial Screw terminals for 16 to 26 AWG wires, 0.15 in centers
Temperature	Operating -25 °C to 75 °C Storage -40 °C to 85 °C
Relative humidity	0 to 90% (not condensing)
Power consumption	2.2 W @ 10 to 30 Vdc AC Adapter included

CE Certification

EMC Directive 89/336/EMC
Emission EN 55022
Noise immunity EN 50082-2C

Included Items

Single unit DIN rail
Open end cable with DE-9S connector
Manual and software on CD-ROM
UL/CSA/VDE approved AC power
Adapters provided for:
US - 115 ±10% Vac, 60 Hz (std)
Europe - 230 ±10% Vac, 50/60 Hz
UK - 230 ±10% Vac, 60 Hz

ORDERING INFORMATION

	Part Number
Ethernet Module with one RS-232 channel	I-7188E1
Ethernet Module with one RS-232 and one RS-485 channel	I-7188E2
Ethernet Module with one RS-232 and one RS-485 and one RS-485/RS-422 channels and 4 digital I/O lines	I-7188E3
Ethernet Module with two RS-232 and one RS-485 channels and 4 digital I/O lines	I-7188E3-232
Ethernet Module with three RS-232 and one RS-485 channels	I-7188E4
Ethernet Module with four RS-232 and one RS-485 channels	I-7188E5
Ethernet Module with seven RS-232 and one RS-485 channels	I-7188E8

For 230 VAC adapter, add suffix to specify country/plug style) -E(Europe), -B(UK), -A(Australia) i.e. I-7188E2-B

To order Modules with the LED Display Option, add a 'D' to the part number i.e. I-7188E2 with a display becomes I-7188E2D