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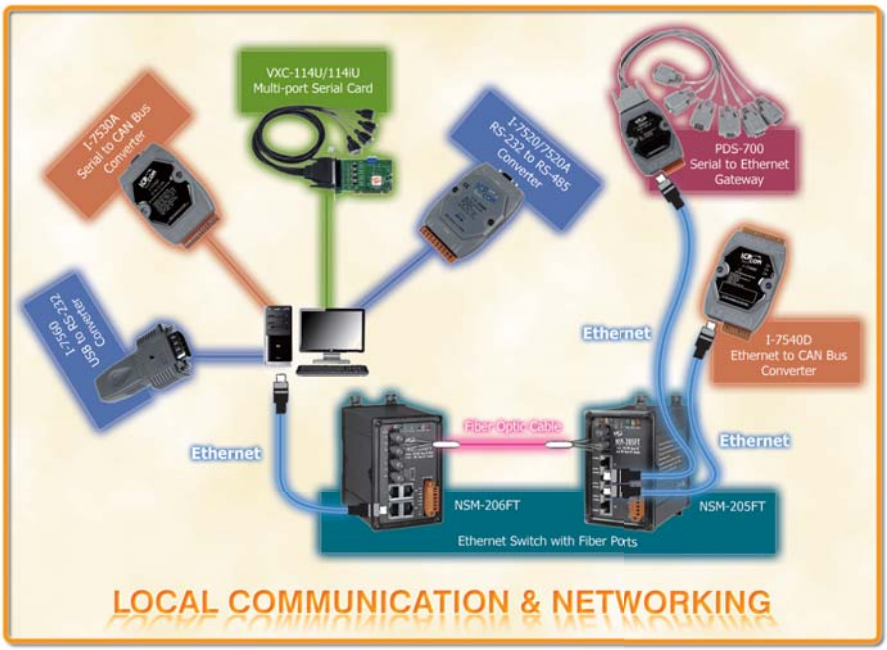
# 1.1. Local Communication and Networking Solutions






## Multi-port RS-232/422/485 Communication Cards

Chapter 2

The VXC series card features Universal PCI (3.3 V and 5 V) or PCI Express interface, provides multiple RS-232 or RS-422/485 communication ports and offers 128-byte hardware FIFO for each port. The VXC series card enables user to install additional communication ports on PCs.

Users can select a specified COM port number manually by setting COM-Selector (DIP switch), or let the driver to choose an available number automatically. The driver provides a maximum of 128 KB software buffer for each COM port under Windows. It's practical for large file transmission.

It's the best choice for time-critical and reliable communications and controls in industrial environments, like communication with PLC, FAB machine, meter, console management of devices, laboratory instruments and Modem link, etc.

## RS-485 Bus Repeater, Converter and Hub

Chapter 4

RS-485 is an electrical specification of a two-wire, half-duplex, multipoint serial communications channel. Since it uses a differential balanced line over twisted pair (like RS-422), it can span relatively long distances (up to 4,000 feet (1,200 m)).

RS-485 is widely used in the computer automation systems, such as building automation, machine automation and factory automations etc. Used for low cost low-speed data communications, it requires minimal wiring, and shares the wiring among several nodes.

ICP DAS provides total solutions on RS-485 bus, such as addressable RS-485 to RS-232/422 converter, RS-485 repeater, RS-232 to RS-485 converter, USB to RS-485 converter, RS-232/422/485 to fiber optic converter and RS-485 Hub... etc.

## USB to RS-232/422/485/CAN bus Converters

Chapter 4

Universal Serial Bus (USB) is designed to allow many peripherals to be connected by using a single standard interface socket, and to improve the plug-and-play capabilities by hot swapping. In brief, devices can be connected and/or disconnected without rebooting the computer or turning off the device.

Currently USB ports are becoming standard interface to external devices on many computers. By using ICP DAS USB converters, users can access industrial RS-232/422/485 serial devices and CAN bus devices through the existing USB ports easily.

## Ethernet Switch

Chapter 8

Ethernet is an ideal medium to transport large volumes of data, at fast speed, across great distances. Previously, multiple networks carrying specific protocols were installed side by side to carry out unique tasks. This inevitably led to project costs increasing as additional fiber optic or copper cables were installed to deal with the increasing volume of data. Using Ethernet, a single fiber optic cable can carry multiple protocols. Furthermore, manufacturers are exporting their legacy protocols onto Ethernet, designing new IP based communication protocols and providing embedded Web-Pages within devices that offer real-time information by simple tools like Internet Explorer and Netscape Navigator.

A switch, like a hub, has to forward and receive packets from one network or device to another. The switch forwards all packets, but if this is the case it shall have similar behavior to a hub. It becomes more intelligent if the switch only forwards packets which needs to travel from one network or device to another.

## Programmable Serial to Ethernet Device Server

Chapter 3

Programmable Device Server (PDS) is a series of Serial-Device to Ethernet gateways. It connects every of your RS-232/422/485 serial devices, such as PLC, bar code reader, RFID reader, meters and motion controllers... etc., to Ethernet that usually is the existing network in office and factory.

VxComm Driver creates virtual COM ports on Windows NT 4.0, 2000/XP/2003 and Vista32 (32-bit) and maps them to physical serial ports on PDS remotely. The user's serial client programs need only to change to the virtual COM port to get the access of serial devices that are allocated in the Internet or Ethernet network via the PDS.

## CAN bus in Industrial Automation

Chapter 6

The Controller Area Network (CAN) is a serial communication way, which efficiently supports distributed real-time control with a very high level of security. It provides the error process mechanisms and message priority concepts. These features can improve the network reliability and transmission efficiency. Furthermore, CAN supplies the multi-master capabilities, and is especially suited for networking “intelligent” devices as well as sensors and actuators within a system or sub-system.

To seek an industrial environment with higher performance and stability, ICP DAS provides you a new communication way (CAN bus). We have a team with strong technical background and experiences, and have been developing and studying CAN bus for years. ICP DAS will always secure your industrial safety and stable automation system as our mission.

## PROFIBUS in Industrial Automation

Chapter 6

PROFIBUS (PROCESS FIELD BUS) which is anchored in the international standards IEC 61158 and IEC 61784 is an open, digital communication system with a wide range of applications, particularly in the fields of factory and process automation. It is suitable for both fast, time-critical applications and complex communication tasks.

To let user can use this powerful communication system more easily, ICP DAS provides kinds of PROFIBUS DP products. We have been developing and studying PROFIBUS DP for years. ICP DAS will always secure user’s industrial safety and stable automation system as our mission