



## INDUSTRIAL AUTOMATION & CONTROL

*IAC users achieve fast Ethernet/IP integration with minimal downtime and costs*

## APPLICATION NOTE

### BUSINESS CHALLENGES

Many process and control industries are aware of the ongoing market pressures to remain competitive by increasing their productivity and product quality, while reducing manufacturing costs. Government regulations and industry standards also continue to push for more secure industrial automation and control networks to reduce the threat of devastating cyber attacks. Deploying Ethernet/IP plant-wide can allow the fast and secure automation and integration of new and efficient manufacturing processes, controls, and information. These include data collection, configuration, diagnostics, discrete, process, batch, safety, energy management, voice and video.

While the Ethernet/IP network standard is growing in popularity as an industrial protocol, new cable installation can be very expensive, especially on a large scale. Many IAC users should consider the technology options available for the necessary network upgrade they can afford.

### OPTIONS AVAILABLE FOR ETHERNET/IP INTEGRATION

- 1) **A full plant upgrade to Ethernet/IP** guarantees the use of the latest technology, but also involves major material costs, labor charges, new equipment costs, extensive downtime and revenue loss. Length of new cables, conduit design and installation, trenching, hazardous location regulations and safety risks are just a few factors that can lead to substantial capital expenses many plants cannot afford when considering network upgrades.
- 2) **Wireless networks** connect IP-enabled devices to a remote IP network. They are easy to install (no running cables in constricted areas) and cost little to maintain but can be unreliable. The popularity of Wi-Fi systems in plants can generate band crowding and RF saturation, leading to poor wireless performance. Wireless networks also tend to have limited processing speed and a high bit error rate. Many wireless systems do not meet current local or national regulation standards as they transmit too much power or operate on non-license free frequency areas. Wireless signals can also be affected by noise from surrounding equipment and heavy machinery, and other interferers such as wide operating temperatures or airborne contaminants.
- 3) Traditional **Ethernet extenders** are LAN modules that can be connected to almost any wiring to drive data over Ethernet between LANs and LAN devices. Ethernet extenders are primarily point-to-point devices, have a distance limitation of 100 meters (328 feet), and require unused, operational wiring. They often fail to perform at the throughput speeds required by new processes and controls, and require frequent reconnecting and reconfiguration.
- 4) **PCN Technology routers, switches and extenders** are a great choice when long downtimes and high costs are not an option, when plants want fast Ethernet network integration over functional serial twisted pair wiring, or when the Ethernet network will extend further than standard distances.

### THE PCN SOLUTION FOR FAST AND EASY ETHERNET/IP INTEGRATION

PCN's IP-485® unique technology enables the fast and easy deployment of Ethernet extension, IP gateways and IP-enabled networks on any operational wiring infrastructure (RS 485, RS 422, 4-20mA, etc), while seamlessly preserving the operation of the existing serial network. PCN 10/100 Ethernet routers and switches provide point-to-point, point-to-multipoint and multi-drop network architecture to connect any IP-enabled devices to the plant's new IP network. PCN products are hot pluggable to reduce or eliminate downtime and they feature auto-configuration for instant plug-and-play installations. PCN routers and switches have received many industry certifications (FCC Class A Part 15, ICES-003, UL, CUL, IEC 60950, UL, Class I Div. 2 Group D) to function in many harsh or hazardous environments.



### BUSINESS CHALLENGES:

- Make Ethernet/IP networks available at all levels of the plant network
- Increase manufacturing efficiency
- Share information between production and business systems seamlessly

### AVAILABLE OPTIONS:

- Full upgrade to Ethernet/IP
- Wireless networks
- Ethernet extenders
- PCN routers & switches

### PCN SOLUTION:

- Enterprise routers
- LAN routers
- 10/100 Ethernet Switches

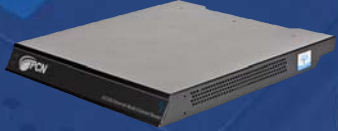
### BENEFITS / PAYBACK:

- Low cost
- Ease of installation
- No downtime
- Use of IP-enabled devices only where needed

## PCN EQUIPMENT AVAILABLE

### PCN Enterprise Routers

Used for large network installations, this router enables connectivity for up to four separate IP networks. It reaches up to 16 PCN Ethernet switches that connect new IP-enabled devices to the existing network (e.g. Serial, Analog, A/V, etc) and allow them to reach the new IP network.



### PCN LAN Routers

Similar to the PCN Enterprise router, this single-channel LAN router can reach up to four PCN Ethernet switches to connect IP-enabled devices to the existing network and the new IP network.



### PCN 10/100 Ethernet Switches

These 3-port RJ45 Ethernet switches are hot pluggable and allow existing network devices and new IP-enabled devices to co-exist on the same wiring.

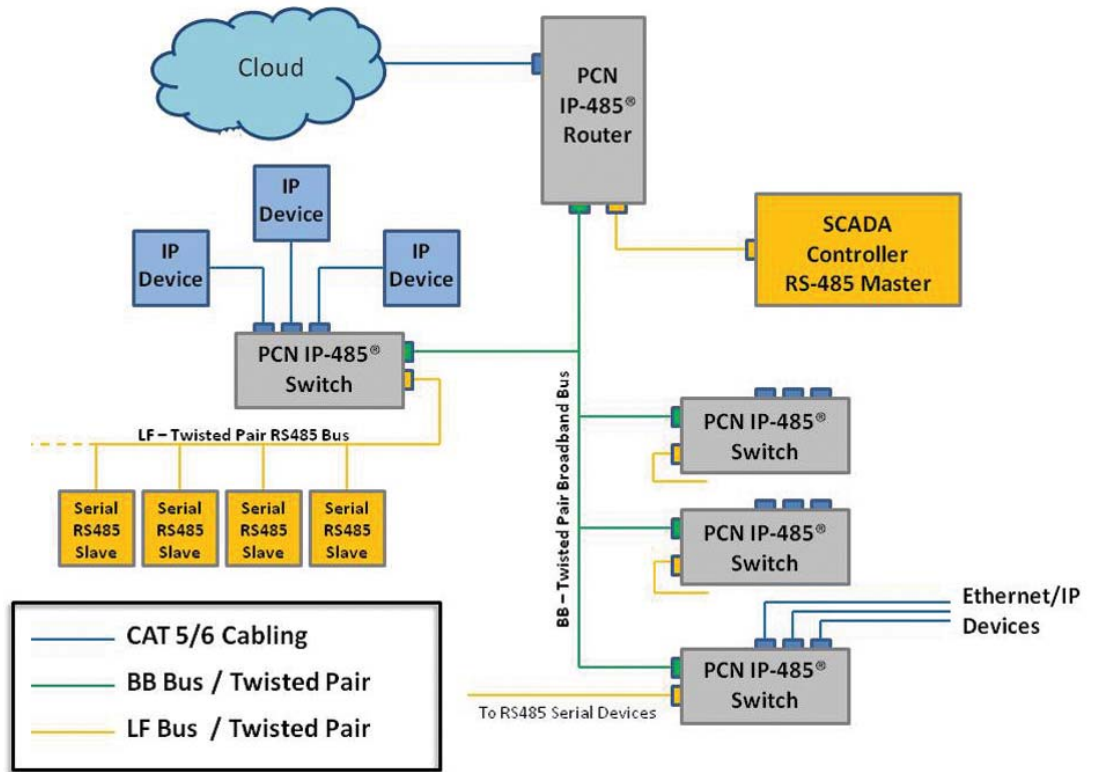


### Development/Validation Kit

This kit contains one LAN router and one Ethernet switch to test and validate PCN products in the field.



By rapidly implementing Ethernet/IP networks in their plant, IAC users benefit from production gains, new functionality and a new way to share information between production and business systems. PCN Technology makes new network implementation easier and more affordable than any other solution available today.



## PAYBACK / BENEFITS OF USING PCN

- **Lower technology risks:** the existing serial network can remain in place and operational, while co-existing with the new IP network. IP-enabled devices are added only where required.
- **Low cost:** there is no need to purchase and install expensive cable for new Ethernet/IP communications.
- **Ease of installation:** PCN routers and switches are auto-configurable and plug-and-play.
- **No or minimum downtime:** PCN products are hot pluggable and require no system shutdown at installation, causing no revenue loss.
- **Reduced safety concerns:** there is no risk to run cables in constricted or dangerous areas, and no potential damage to the existing infrastructure.
- **Low bit error rate:** PCN routers and switches deliver uncompromised process and control data at high speeds.

## NEED HELP WITH AN UPCOMING UPGRADE?

To discuss an upcoming need for fast and cost-effective Ethernet/IP integration in your facility, please contact us by phone or email:

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## ABOUT PCN TECHNOLOGY, INC.

Founded in 2004 and headquartered in San Diego, CA, PCN Technology designs, develops and manufactures routers and switches to ensure fast, flexible and reliable Ethernet/IP integration. PCN products use any existing operational wiring to upgrade legacy networks and offer Ethernet-on-Demand™ without impacting your existing data operations. PCN products can be used in many industries, including industrial automation, building automation, oil & gas, power & energy, water & wastewater treatment, telecommunications, information technology, security & access control, government & defense, retail/point-of-sale, and transportation.