# QPC

## Quantum Process Control

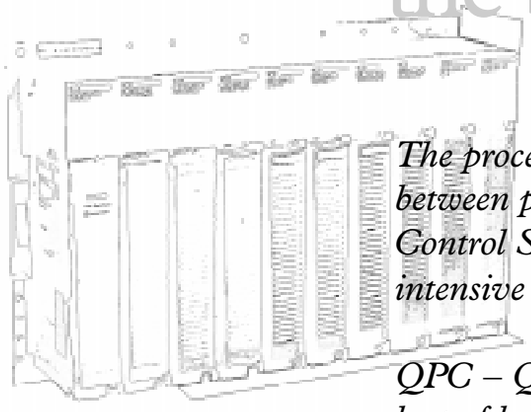
*Powerful and flexible solutions for process control*


Modicon
Square D

Schneider Electric
*We do more with electricity*

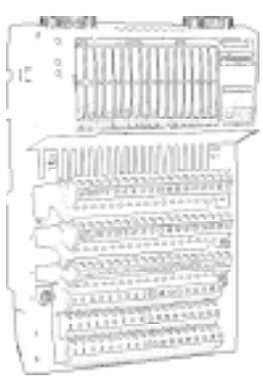
# *Combining*

## *the best of both worlds...*



*The process control industry has always had to choose between powerful, yet expensive, proprietary Distributed Control Systems and flexible, low-cost integration-intensive Programmable Logic Controllers.*

*QPC – Quantum Process Control – now offers the best of both worlds to provide you with a powerful and flexible solution that provides far more than any singular DCS or PLC ever could.*



# ...to meet all *your process control needs*

***QPC is a world class process control solution that breaks down the barriers of proprietary hardware, programming software and communications and combines them with the openness of the Internet and intelligence of state-of-the-art PLCs to give you the utmost in control, connectivity, scalability, and reliability.***

**A total solution**

QPC is what process control should be - a total solution that combines all of the elements necessary to design, implement and maintain your system in a single, integrated offer.

**Proven and reliable**

Your processes are far too critical to trust to just any automation system, and that's why QPC is based on the proven Quantum and Momentum control platforms. With literally thousands of installations and years of reliable operation behind them, you can be confident that a QPC process control system won't let you down.

**Flexible and powerful**

Scalability and true distributed control are what make QPC ideal for process control. From a single Quantum PLC to a fully distributed system utilizing Quantum as the primary CPU with distributed intelligence via Quantum or Momentum, QPC offers the processing power where you need it.

**Easy to design, install and maintain**

Every control system starts and ends with software, and QPC offers the most comprehensive suite of engineering software tools to design, implement, document and maintain your system - all within a single, intuitive and easy-to-use programming environment.

**Process control for the web automation age**

The technologies of the Internet, Ethernet and TCP/IP are not just for surfing the web. They offer real benefits to the industrial environment, and Schneider has fully embraced them. Data is no longer buried within proprietary control systems, and controlling, monitoring, and maintaining your system is now as close to you as the nearest PC with a web browser.

# QPC
# Proven platforms...

***Schneider's Quantum Automation Series is the foundation platform for QPC, providing a backbone of high performance and large system capacity. Combined with our highly versatile Momentum Automation System, QPC can solve just about any application requirements you have.***

## Quantum

***Quantum provides a scaleable and modular architecture to meet the highest performance application requirements***

From a single rack system to a plant-wide architecture, Quantum is the one platform that meets all your process control needs:

- Easy to configure and maintain
- Offers flexible choices of architectures and modules.
- With thousands of installations around the world, Quantum is thoroughly field-proven in hundreds of different applications
- Quantum is the reliable choice to handle even your most demanding applications:
  - Capable of more than 5000 analog and 32K discrete I/O points
  - Easily manages 50 - 75 loops
- Quantum features high performance controllers, advanced IEC programming, and open connectivity over a variety of networks
- Compatible throughout the range of Schneider products

## Momentum

***The modular, adaptable system to integrate a scalable Quantum process control system***

The Momentum Automation Series is a complete family of control products - I/O modules, Processors, Communication Adapters, and Option Adapters — designed to seamlessly integrate with Quantum. Momentum s unique modular design gives you the flexibility to create a system that meets your needs perfectly.

- Cost effective distributed I/O
- Powerful processing
- Distributed systems
- Integrated architectures
- Modular
- Adaptable
- Versatile

# ... for any application

**System benefits**

Advanced
Easy to use
Flexible
Proven
Reliable

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**Industries**

Cement
Chemical
Food & Beverage
Glass
Metals
Paper
Petrochemical
Petroleum and Pipeline
Pharmaceutical
Plastic & Rubber
Pulp
Refining
Water treatment

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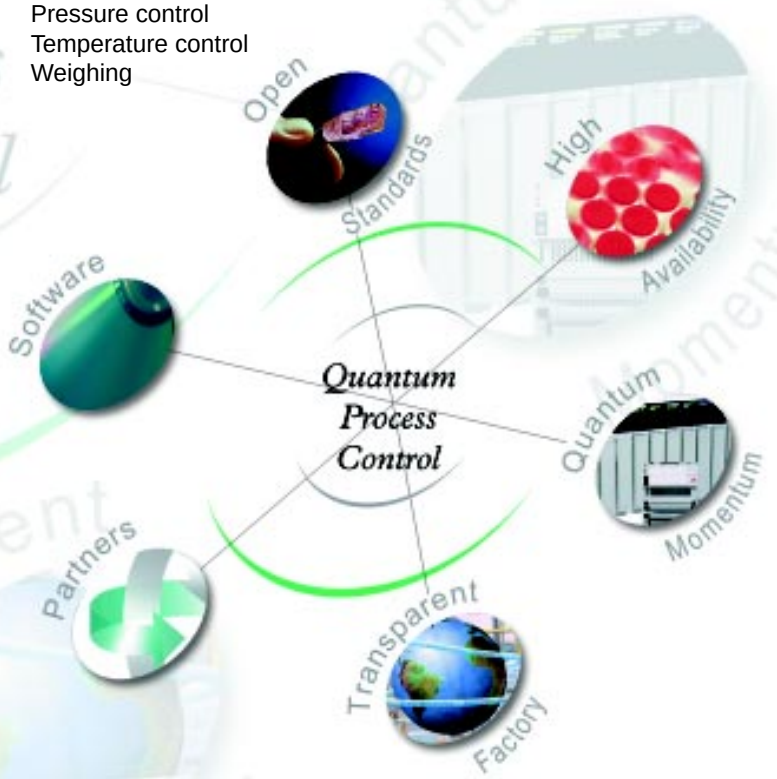
**Applications**

Batch reactor control
Flow control
Flow measurements
Ingredient mixing & blending
Ph control
Pressure control
Temperature control
Weighing



# QPC
# An open control environment...

***Schneider Electric has always been a strong proponent of open standards. Today, our dedication to openness and commitment to developing our products based on the technologies of the Internet have placed us at the once forefront again. In fact Quantum boasts support for 13 different networks.***

## Ethernet Connectivity

***Ethernet-based solutions open a world of opportunities***

Quantum has adopted open and universally available Ethernet, TCP/IP and related technologies. Ethernet and TCP/IP are the fastest growing communication medium of our time. Ethernet is fast, cost effective, and reliable, and currently there are more Ethernet nodes installed each day than any other proprietary fieldbus networks annually! This broad-based support, together with its use as the medium of the information revolution, ensures continual improvements in speed, security, and reliability – attributes which are critical to the process environment.

## Open technologies working to your advantage

***You can rely on Schneider, the leader in deploying open systems***

With our clear vision of the future, we have embraced open system architectures and developed a suite of technologies known as the Transparent Factory that virtually eliminates the specialized and cryptic systems of the factory floor to deliver unprecendented flexibility, connectivity and global accessibility. Utilizing commercially available Internet-based technologies, Schneider's Transparent Factory open architecture control solutions provide unprecedented levels of openness and connectivity in your automation infrastructure.

## Optimized process communications

The information demands of a process control application quickly burdens most legacy systems. However, Quantum provides a 100M Ethernet TCP/IP communication interface with advanced process control enablers that distributes data across multiple controllers at lightning speed. This publish and subscribe environment also simplifies system configuration and allows highly scalable device integration. Maintenance features such as online replacement of faulty devices, along with powerful network management tools for performance and maintenance, make Quantum the ultimate solution for process control.

# ...with best-in-class web technologies

***Schneider's web-based control technologies provide real-time information, for real benefits, right now.***

## Transparent Factory®

***The benefits of the Internet right in your own control system***

With Transparent Factory®, Ethernet and TCP/IP, you have an open solution capable of total connectivity. Our Ethernet offer features:

- Open Fast Ethernet
- Open connectivity with Modbus protocol and standard Ethernet
- State-of-the-art "auto-sensing" 10/100Mbps Ethernet that is the market standard for Ethernet users
- I/O scanning on Ethernet
- PLC applications can manage distributed I/O nodes and devices connected to Ethernet with Modbus over TCP/IP
- Web-based management
- Embedded server ready-to-use for first level diagnostics through a standard web browser for device and communication stack status
- ConneXium™ Industrial Cabling System
- Suitable for use in harsh environment designed to industry standards

## Quantum FactoryCast

***Simple, familiar, browser-based access to your PLC data***

The Quantum FactoryCast embedded web server is an innovative approach to browser based access for PLC data. This innovative solution consists of the top-of-the-line Quantum family modules (140 NOE 771 00, 140 NOE 771 10) with embedded web functionality, plus software to customize the browser windows. These two Quantum modules, along with the Quantum FactoryCast Embedded web server and the Quantum Ethernet I/O Scanner Module, can instantly turn any Quantum PLC into an Ethernet and Internet-friendly control system help you to enter the future of automation, today.

## OPC Factory Server

***Easy, standardized access to automation data***

The OPC Factory Server is designed to provide easy, standardized access to factory automation data, permitting the development of interoperable client and server applications. System integrators, software developers, and hardware manufacturers alike will spend less time on communication and database integration issues by using the OPC open standard. End-users will be able to use every OPC Client application compliant with the OPC standard version 2.01. OPC provides access via networks such as Modbus, Modbus Plus, Modbus TCP/IP or X-WAY to the Schneider PLC range.

# QPC
# Maximize system capability...

***Downtime in any process control application is a serious issue that influences not only productivity, but also product quality. To minimize downtime, control engineers in every industry are turning to Quantum Hot Standby.***

## Quantum Hot Standby

***For operations that demand total reliability***

Quantum Hot Standby is a special redundant backup system designed to provide your operation with the most reliable, highly available system. The key features and benefits include:

- Reduced downtime
- Fast response time
- Secure and reliable
- Simplified diagnostic and debugging
- On-line program download and transfer
- Uninterrupted communication
- IEC 61131-3 programming language support

## Uninterrupted operation

***For maximun availability and productivity***

The Hot Standby system controls addressing of the Modbus, Modbus Plus, and Modbus TCP/IP web server communication ports so control transfers are transparent to host computer communications. Host computers simply poll the primary controller's address for process data. In the event of control transfer, the station address follows the primary controller function, not the physical unit. The host computer can also access the standby controller directly for maintenance requirements such as program upload/download or diagnostic information.

Other features:

- Hot swap I/O, power supplies and option modules
- Redundant power supplies
- Redundant I/O communications
- Redundant enterprise communications
- Standby controller programming without a programming terminal

# ... for increased productivity and quality

**Automatic IP address swapping**

The Quantum communication modules (NOE 771 00, NOE 771 10) coordinate the swapping of IP addresses. In the event the primary controller goes off line, the IP address is automatically swapped to the secondary communication module, thereby providing uninterrupted and seamless communication.

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**3 economical, pre-configured Hot Standby Kits**

For the convenience of our customers we have developed three different Hot Standby kits. These kits include all the necessary components of the Hot Standby system.

**Three economical Pre-configured Hot Standby kits:**

1. Hot Standby Option Kit – includes two option processors, wiring, connectors, and other necessary cabling components to create a Hot Standby architecture with your existing Quantum PLCs.

2. Level One Kit – a complete kit including two backplanes, two “11302” CPUs, two power supplies, two RIO processors as well as the Hot Standby Option kit and 984 programming software.

3. Level Two Kit – same as the Level One Kit, but with the more powerful “11303” CPU for even greater memory capacity.

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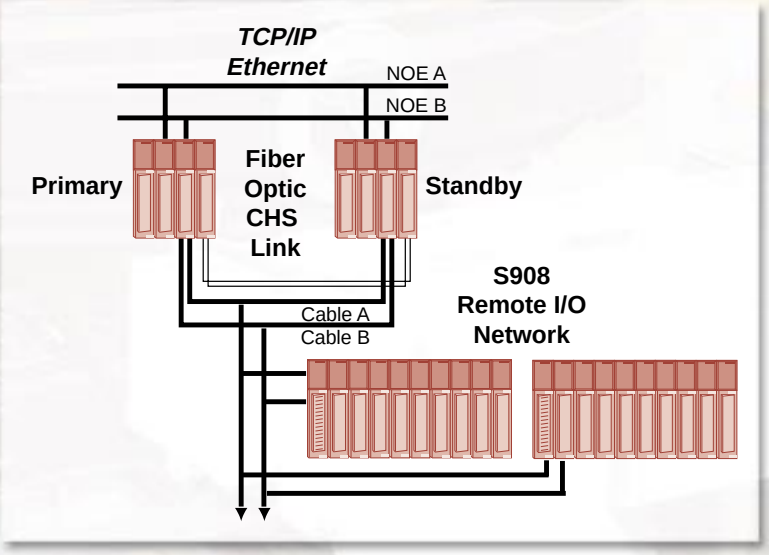
**Typical Hot Standby architecture showing redundant cable option**



# QPC
## I/O solutions...

The Quantum Automation Series supports a full range of high performance I/O modules designed to interface with a wide variety of field devices.

- Easy to troubleshoot and configure
- Software configuration makes Quantum Analog I/O flexible
- CableFast terminal block for fast and easy wiring
- Wide selection

**Wide selection of I/O**

Many types of I/O have been developed for the Quantum family over the years, and these same I/O provide QPC with unsurpassed functionality and reliability.

- Analog and Discrete I/O
- Intrinsically Safe I/O
- High Speed Counter modules
- Motion Control modules
- Latch/ Interrupt modules
- Telefast I/O modules

**Lower cost of maintenance**

Since QPC I/O is the same as for any other Quantum application, you don't need any special training or experience and you don't need to maintain a separate inventory of spares, resulting in a more efficient use of your resources.

**Meets international standards**

Quantum modules meet international standards such as UL, CSA, CE, and VDE. In addition, Quantum is approved by Factory Mutual for use in Class 1, Division 2 Groups A-D, equivalent to IEC standards Ex ia and Ex ib Zone 2 Groups IIA-C. Quantum is certified to meet the European Community directives such as 73/23/EEC LVD (Low Voltage Directive) and 89/336/EEC EMC (Electromagnetic Compatibility).

# ...that satisfy all your requirements

**Momentum I/O**

Schneider's Momentum I/O family is a full range of industrial tough, high performance input and output modules that meet the internationally accepted IEC electrical standards to ensure reliability in the harshest industrial environments. No matter where in the world your plant is located, Momentum is up to the task.

**Proven solution**

Momentum is a proven Schneider platform that delivers high speed, low-cost, modular, open architecture solutions and is perfectly suited for all process control applications.

**Cost effective for distributed I/O**

For applications requiring small "drops" or concentrations of I/O distributed over many locations, Momentum I/O can be cost-effectively located close to the process using many popular open fieldbus networks such as HART or Profibus DP.

**Distributed system**

In larger, integrated control architectures, Momentum can off-load, simplify, bridge, distribute, consolidate, and otherwise fill the gaps in conventional systems. Using the powerful M1E processor, a true distributed processing system is created. Being part of the Modicon family of products, Momentum is a natural extension to Quantum.

**Integrated architecture**

As a distributed I/O platform, Momentum is made-to-order for the Ethernet TCP/IP, Profibus DP, Modbus Plus and Interbus communication modules in the Modicon Quantum series.

**Ethernet I/O**

The use of Modbus, TCP/IP, and Ethernet allows connection to Schneider's automation control products, including Momentum I/O modules, and provides access to operations data from field devices on the manufacturing floor on up through to the plant wide enterprise. Ethernet utilizes an IP addressing scheme which permits nearly an unlimited number of units or connections on the network. And with the use of standard Ethernet routers, hubs, and bridges, the performance and distance capabilities of the network can be tailored to meet the needs of almost any control system.

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