



The Benefits of Integrating Cyber Physical Systems White Paper



ENGINEERING YOUR SUCCESS.

The Benefits of Integrating Cyber Physical Systems

“Today’s smart production facilities are networked, decentralized and optimized for maximum function integration with smart Cyber Physical Systems”

Cyber Physical Systems, the Heart of Industry 4.0

Cyber Physical Systems (CPS) are smart, intuitive devices which communicate and integrate more functionality than conventional technology would normally offer. Smart devices vary in standardization and function however most have some common attributes. Typically, CPS have a mechatronic structure consisting of a standard technology (pneumatic, hydraulic or electromechanical), have embedded electronics and sensors and require electrical power (usually low voltage). The integration of multiple technologies has furthered the interaction and capabilities of the traditional automation system. Controlled by software, CPS offer an intuitive easy to use interface, provide maximum ease of troubleshooting and commissioning on machine and a new level of simplicity, flexibility and diagnostics.

Cyber Physical Systems are an unstoppable force at the heart of Industry 4.0 as these systems are interconnected and communicate providing benefit across the entire value chain. The flexibility and simplicity achieve incredible cost savings and fast return on investment. These advanced systems will continue to play a pivotal role in the expansion and development of Industry 4.0. One example which clearly demonstrates the mechatronic genius of a Cyber Physical System is the PCH Network Portal, designed by Parker Hannifin.

PCH Network Portal, Value Redefined

The PCH Network Portal redefines and revolutionizes machine I/O with the integration of new technologies. The PCH Network Portal is an I/O master control device that supports multiple Industrial Ethernet communication protocols to communicate with the many industrial controllers used in the automation industry. Robust enough to handle varying temperature ranges, vibrations and the electrical noise of the industrial environment, the PCH Network Portal was engineered for the open protocol IO-Link as well as configurable I/O which offers true PNP/NPN circuitry switching on each port. The value of the PCH Network Portal has been completely redefined with its intuitive interfaces, streamlined diagnostics and flexible design. There is something for the specifier, integrator and maintenance person manufactured into one thoughtful redefined CPS unit.



Key Benefit (s)	Shortens start-up time, reduces overall design costs and machinery architecture	Easy integration and adaptations minimizing machine cost	Decreases downtime with easy troubleshooting
Value (s)	<ul style="list-style-type: none"> • Reduced commissioning time • No additional software needed • Reduced machinery architecture components and costs • Reduced overall costs of machine design • Built-in programming functions 	<ul style="list-style-type: none"> • Power in and out connectors • Easy access to additional power • Simple 2 zones (isolated) for safe power capability • Multiple configurations for IO-Link or configurable I/O • Single customizable footprint 	<ul style="list-style-type: none"> • Improved diagnostics to PLC • Process and parameter data (easy to retrieve) • Bluetooth or web-app for phone, pc or tablet • Remotely configurable from 50 ft away • High lumen LED's for visual troubleshooting

Revolutionary and Redefined, Bold Flexible Design

As with all Cyber Physical Systems, intuitive interfaces are the backbone of simplicity in applications. The PCH Network Portal offers several means of intuitive, embedded interfaces which **reduce the time to commission a machine**. Accessing data and commissioning the PCH Network Portal can be accomplished through the Bluetooth or web based 'PCH Portal Configuration Tool'!

The PCH Network Portal **minimizes machine costs** by redefining the traditional process of connectivity within a single footprint that provides multiple configurations. The flexibility of configurable I/O revolutionizes machine design and can save thousands of dollars at the design phase which typically accounts for 30 - 40% of overall costs. Changes can be made to the system with easy software reconfiguration of ports eliminating the need for additional hardware or time consuming programming.

Unplanned downtime can cause additional maintenance costs and lost revenue. Streamlined diagnostics **prevent, limit, and reduce downtime** thanks to easy troubleshooting. Simple PLC access is available to make further use of prognostic and diagnostic data.



Brilliant!

Super bright LEDs emit a brilliant high lumen output, providing the user visibility of the configuration of the PCH Network Portal's ports from outside the work cell. The LEDs are designed with 120-degree viewability to accommodate for placement of cables, splitters, and tees. Large port labels are also offered for easy port to cable identification.

Smart, intuitive, easy and brilliant.



Reduced Machinery Architecture, Easy Integration and Advanced Maintenance

The PCH Network Portal can reduce overall machine controls cost by consolidating node and architecture layout. The features and configurability of the I/O modules make the PCH Network Portal easy to integrate and changes to machine design can be implemented quickly, without significant added cost. Advanced diagnostic capabilities make maintenance, setup and commissioning easy and intuitive. Design advantages of Cyber Physical Systems allow significant cost savings on the front end of system design, while the PCH Network Portal continues to provide lasting benefits through installation, commissioning and servicing.

For more information on the PCH Network Portal visit our website www.parker.com/pdn/PCHPortal for additional whitepapers:



PDNWP-014 Streamlined Architecture
Reduces Machinery Costs



PDNWP-015 Optimize Integration
with Flexible Design



PDNWP-016 Decrease Downtime
by Streamlining Diagnostics

