

## Festo Ethernet-Based CPX-AP-I Decentralized I/O Moves Past Remote I/O With Greater Capabilities

On long conveyor systems, decentralized I/O moves valves closer to cylinders for improved performance.

Festo features [CPX-AP-I](#), the company's decentralized I/O solution, at Pack Expo, September 27-29, Las Vegas, Booth # 6132. CPX-AP-I enables expanded capabilities to be incorporated quickly and cost effectively to packaging machines and long-length conveying systems without the expense and time associated with extensive wiring and installing control cabinets.

CPX-AP-I decentralized I/O is an Ethernet-based system consisting of intelligent bus nodes that are rated IP65/IP67 for versatility in mounting outside of a control panel. CPX-AP-I decentralized I/O bus nodes are compatible with the major communication protocols and offer simple integration into the controller of choice via EtherNet/IP, PROFINET, PROFIBUS, EtherCAT, and ModbusTCP.

CPX-AP-I makes it easy to apply IO-Link enabled intelligent devices for fast and simple installation, improved control, and enhanced system diagnostics. CPX-AP-I increases the performance of pneumatic systems by moving valves closer to actuators on large-scale systems.

For the past 20 years, advancements made by Festo in electronics have transformed pneumatics in terms of faster cycle times, greater capabilities, and diagnostics. One of the most important recent electronic advancements in pneumatics has been CPX-AP-I decentralized I/O.

### CPX-AP-I builds on the benefits of remote I/O

Communication and voltage supply come from two separate connection cables that enable the creation of voltage zones. Because CPX-AP-I is based on Ethernet, data bandwidth and speed exceed that of remote I/O. CPX-AP-I features:

- 2 kByte I/O process data
- More than 80 modules per bus node
- Parallel data processing of real-time and non-real-time data
- Bus cycle times 250µs for rapid production processes
- Enhanced diagnostics and condition monitoring

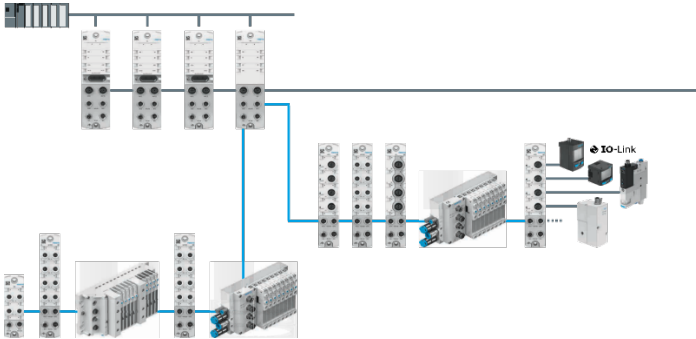
CPX-AP-I I/O Topology Example

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The topology image illustrates the versatility in terms of range of solutions of CPX-AP-I. The upper left shows the IP65/IP67 Ethernet-based decentralized I/O bus nodes connected to the controller of choice. In the center, there is a daisy-chain branch of digital and analog input blocks, valve manifold, and IO-Link master module with IO-Link enabled sensors. At lower left, a valve terminal starts a second decentralized branch, which includes another valve manifold and digital and analog input blocks.

As stated above each CPX-AP-I system can accommodate more than 80 digital and analog input blocks, valve manifolds, and IO-Link master modules per system, with cable lengths up to 50 meters between modules.

Because of the extended distances available between modules, CPX-AP-I is ideal for large scale material handling, packaging, and processing systems where moving valves closer to actuators is essential for reducing cycle time. For example, moving a valve with 8 mm tubing from 4 meters to 2 meters away from the cylinder reduces pressurization time from 40 milliseconds to 20 milliseconds – a 2 times improvement in performance.

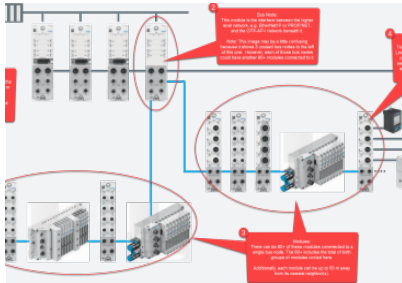
CPX-AP-I comes standard with Integrated IO-Link master and IO-Link device tools that allow intelligent sensors to be added to the systems. As the technology matures, additional solutions will include the incorporation of vision systems and pressure and flow sensors within the CPX-AP-I architecture.

Plug-and-play capabilities support Industry 4.0 concepts of modularity and fast, simple, and cost-effective reconfiguration and reuse of assets. With IIoT gateways and data contextualization, end users can employ dashboards for anytime/anywhere real-time analysis, troubleshooting, and predictive analytics.

CPX-AP-I decentralized I/O represents the latest development in lowering the cost of remote I/O while obtaining the increased benefits of faster and easier installation, greater system capabilities, and improved performance.

For more information on [CPX-AP-I](#) for packaging, material handling, and processing applications call 800-993-3786. To see the full range of Festo products and solutions visit <https://www.festo.us>.

## Press Images



### Decentralized I/O topology with notes

The bus modules (top left) connect to the controller, daisy-chained digital and analog input blocks (center), and valve terminal (lower left) show the CPX-AP-I decentralized I/O topology.