

## Allen-Bradley Communications Modules

Implementing network-based access control for users, devices and networks



Rockwell Automation offers a variety of standard Allen-Bradley® communications modules that support CIP™ networks (EtherNet/IP™, DeviceNet™ and ControlNet™) as well as other network protocols. While these protocols can function as standalone networks, they can also be combined for a customized solution based on your application's needs.

When choosing the right network for your application, there are a few important questions to consider:


- How large is my application and what are my basic network needs?
- What are my short- and long-term intentions for my network? Are they the same? How do they differ?
- How should I consider protecting my network?

Once you have answered these initial questions, it is important to further understand how the following key attributes can help you choose the right communication module for your system:

- 1. Performance** – an I/O network requires different performance than a data network. With support for 100 MB and 1 Gb with packet rates of over 100,000/ packets per second (pps), EtherNet/IP networks offers the most versatility with the highest performance.
- 2. Certifications** – Our products offer certifications such as ATEX, IECEx, Marine and more. Please see product-specific information for more details depending on your application.
- 3. Media Type** – Select the appropriate media type from fiber to wireless to Gigabit Ethernet to redundant media options and efficiently meet your industry's needs.
- 4. Security** – Achieve data encryption to and from the controller using EtherNet/IP™ connectivity to production servers to add a layer of protection to your network



LISTEN.  
THINK.  
SOLVE.®

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**Rockwell**  
**Automation**

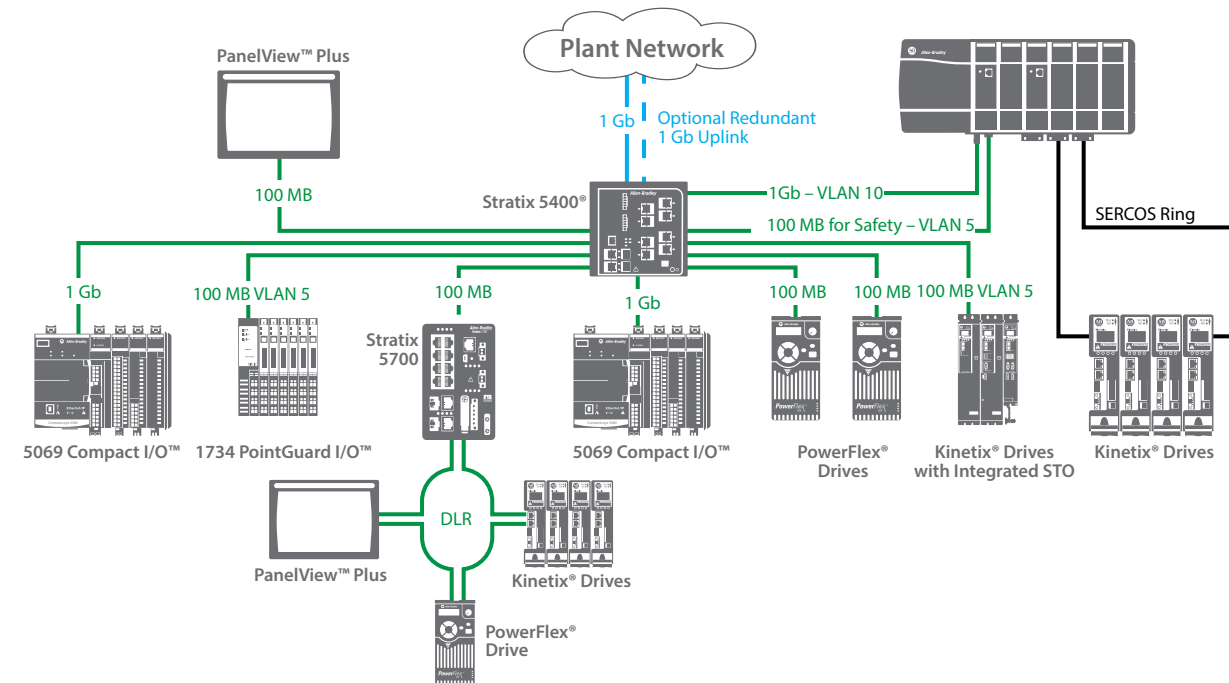
## Rockwell Automation CIP Networks

EtherNet/IP, ControlNet and DeviceNet

### EtherNet/IP Networks

**Recommended for information and I/O, discrete and process applications**

- Most versatility for performance. Supports 100 MB and 1 Gb with packet rates of over 100,000/pps
- Provide automation configuration, diagnostic monitoring and control of the network when paired with a Stratix® industrial Ethernet switch
- An open industrial-networking standard supporting both real-time I/O messaging and message exchange
- Use off-the-shelf Ethernet communication chips and physical media
- Provide power to devices using Power over Ethernet (PoE) connectivity to help minimize cabling
- Offer embedded switch technology
- Offer redundancy capabilities while being directly connected to the rest of the network helping to provide increased resiliency
- Help provide secure connectivity
- Offer extreme environment support
- Unlimited device support



### DeviceNet Networks

**Recommended for use in discrete applications**

- Use the Common Industrial Protocol (CIP) to control, configure and collect data for industrial devices
- Provide connections between simple industrial devices and higher-level devices
- Offer the ability to power devices from the network
- Support for 64 nodes

### ControlNet Networks

**Recommended for redundant media and process applications**

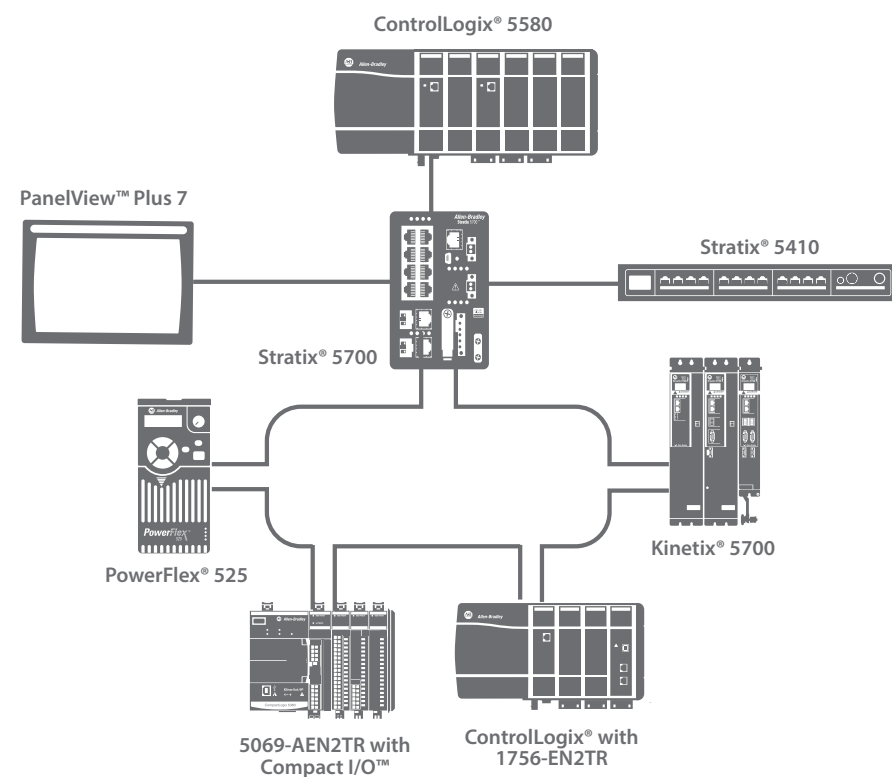
- Use the Common Industrial Protocol (CIP) to combine I/O network functionality and peer-to-peer network functionality for high-speed performance
- Provide open, control network for real-time, high-throughput applications
- Offer deterministic, repeatable transfers of all mission-critical control data
- Support transfers of non-time-critical data
- Offer extreme environment support
- Support for up to 99 nodes



## High Availability in EtherNet/IP Networks

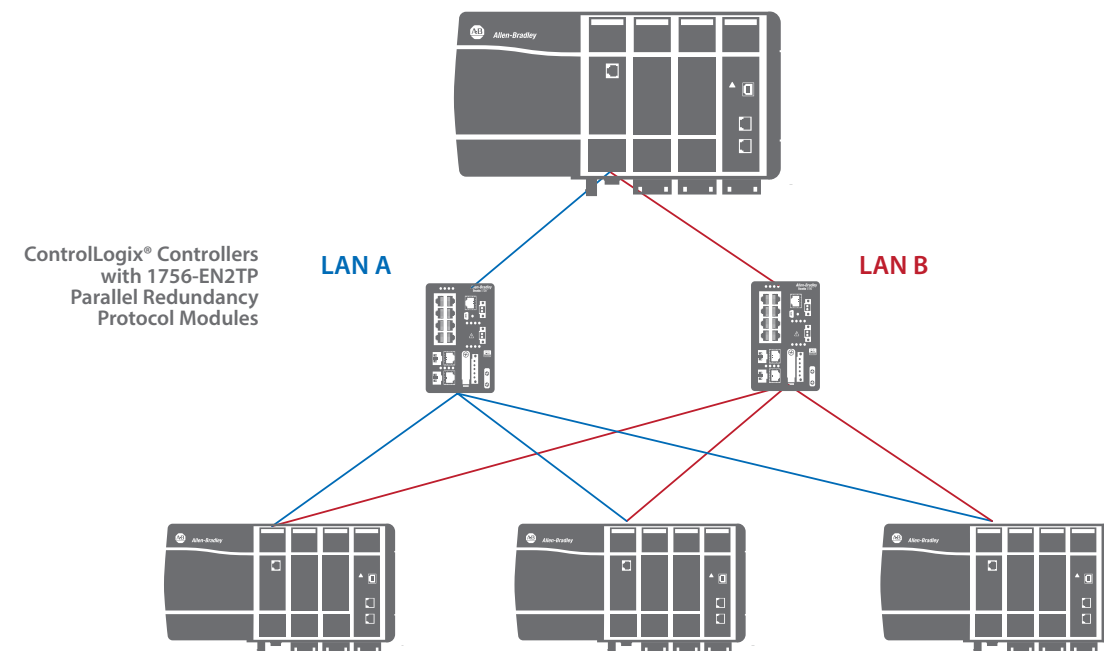
### Device-Level Ring Protocol

- Device Level Ring (DLR) protocol is a layer 2 protocol that allows EtherNet/IP DLR devices to form a ring topology
- Used to enable high-speed, high-performance applications where resiliency is required
- When the supervisor in the ring detects a break in the ring, it provides an alternate data route to help recover the network quickly



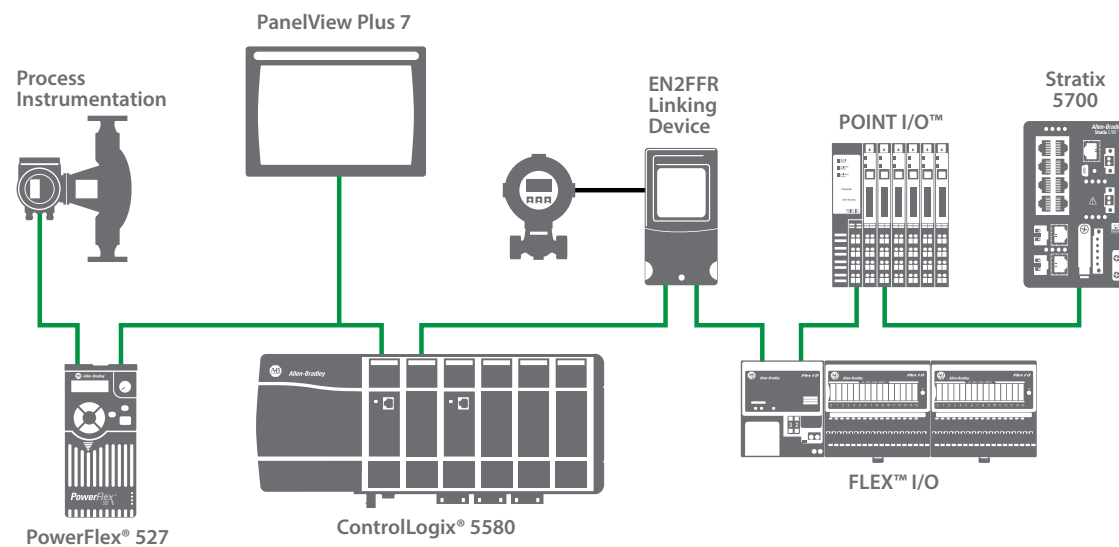
### Parallel Redundancy Protocol

- Parallel Redundancy Protocol (PRP) is a layer 2 protocol that allows EtherNet/IP PRP devices to communicate on redundant LANs
- Provides a redundant network infrastructure for high availability to help minimize the risk of downtime
- PRP devices have two ports and are attached to two separated networks of similar topology
- IEC 62439-3 compliant, meaning the same packet is sent out of both ports to eliminate network switchover time
- For example, the 1756-EN2TP supports PRP



## HART, FOUNDATION Fieldbus and PROFIBUS PA

- A widely accepted global protocol standard for digitally enhanced communication with instrumentation within the process industries
- Used for sending and receiving digital information across analog wires between smart devices and control or monitoring systems
- We offer a variety of analog I/O modules with HART connectivity



- A standard that provides the ability to distribute the control architecture throughout your facility
- We offer linking devices that provide a fast and integrated solution for adding FOUNDATION Fieldbus field devices to any Logix platform
- Our linking devices provides a direct link between FOUNDATION Fieldbus and either EtherNet/IP or ControlNet without requiring an intermediate FOUNDATION Fieldbus layer
- When combined with our PlantPax™ process automation system, provides a single plant-wide control and information platform with an integrated, seamless distribution of data and the execution of process control with devices from multiple sources

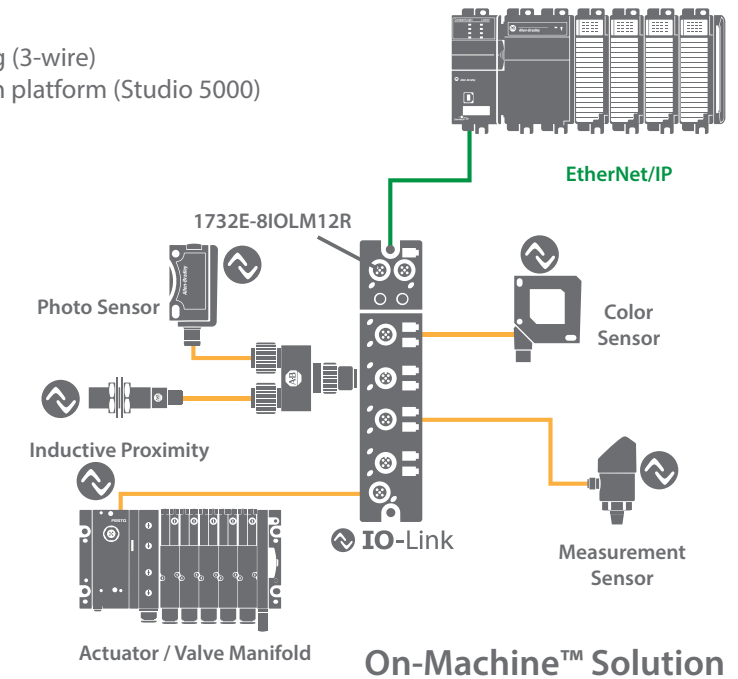
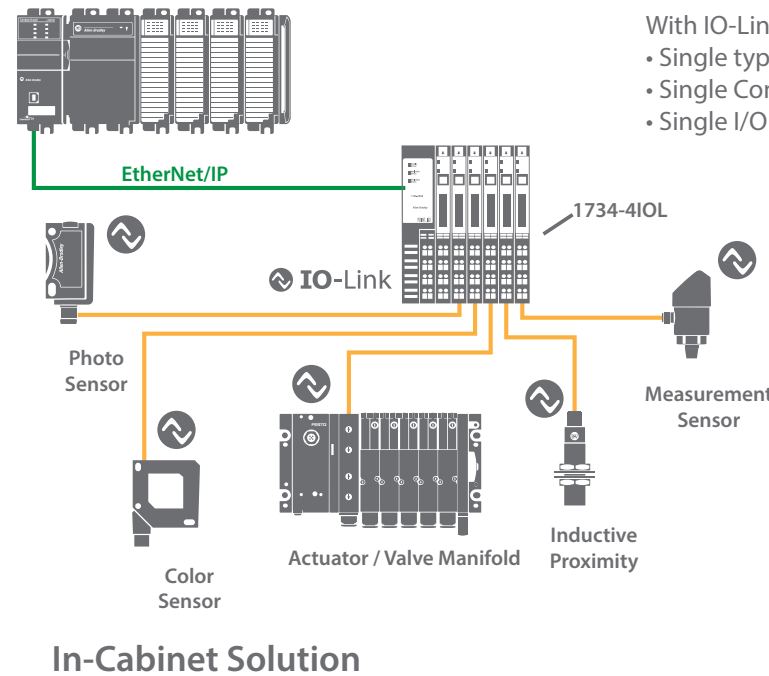
- A fieldbus-based automation standard of PROFIBUS and PROFINET International (PI), standardized in IEC 61158
- We offer linking devices that provide a fast and integrated solution for adding PROFIBUS PA field devices to any Logix platform
- Our linking devices provide a direct link between PROFIBUS PA and either EtherNet/IP or ControlNet without requiring an intermediate PROFIBUS DP layer
- Fully integrated solution through the PlantPAx process automation system

## Serial, I/O and Third-Party Networks

Data Highway and IO-Link

### IO-Link Networks

- A worldwide open-standard protocol that integrates sensors into our Connected Enterprise by connecting the IO-Link enabled device into an IO-Link master module
- Deliver data from the sensor directly into a control system efficiently
- The flexibility of IO-Link capable sensors allows machines to operate more effectively by providing the controller with detailed and accurate machine diagnostics to improve uptime and increase productivity



### Data Highway Networks

- A local area network designed to support remote programming and messaging between computers and controllers for factory-floor applications

### Third-Party Networks

- Through the Encompass Partner Program, our third-party product referencing program and part of the Rockwell Automation PartnerNetwork system, you can quickly locate the communications modules, bridging and linking devices to address your networking challenges.

*From legacy, to non-Rockwell Automation devices, to maintaining a future-ready network, we can help solve your networking needs. Find out more today!*



Installations should consider the following. While other networks are still available, this table is an at-a-glance:

	EtherNet/IP	ControlNet	DeviceNet	HART	IO-Link
Recommended for:	Information and I/O, discrete and process applications	Redundant media and process applications	Discrete applications	Process applications	Discrete applications
Media Type*	Copper, fiber and wireless	Copper, fiber	Copper	Copper	Copper
Security	Yes	No	No	No	No
Number of Devices	Unlimited	Up to 99	Up to 64	Dependent on number of IO modules	Dependent on number of IO modules

See the *ControlLogix Communication Modules Technical Data* or the *ControlLogix System Selection Guide*

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