ControlLogix® Peer-to-Peer I/O

High performance I/O for the most demanding application requirements

Allen-Bradley

What is Peer-to-Peer I/O Control?

Peer-to-Peer I/O Control is a new capability inherent in the recently introduced ControlLogix I/O modules. Peer I/O devices (modules with peer-to-peer control capabilities) establish in-chassis connections that allow them to communicate directly with each other. Outputs are then energized based on data received from the input peer, independent of the controller. When this method of control is employed, screw-to-screw throughput speeds are drastically reduced resulting in higher machine speeds and increased parts production.

Here's how it works:

1. The input peer module is configured as normal with dedicated profiles to "produce" data to the control system.
2. The output peer module is configured to "listen" for data from an Input Peer and energize its outputs via a dedicated boolean editor in the profile.
3. In run mode, the output module "listens" for the data the input module is producing.
4. The output module energizes outputs when it "hears" the required parameters.

Shift your control system into high gear with ControlLogix high performance I/O

With the inclusion of Peer-to-Peer I/O Control, the latest additions to the ControlLogix family of I/O deliver significant performance improvements, increasing production capacity and minimizing system response time. Three high speed I/O peer devices have been added to the ControlLogix platform offering individual benefits and, when used in combination, provide Peer-to-Peer I/O Control with nominal screw-to-screw speed of < 100µS, independent of the controller:

1756-IB16IF Fast 24vdc Input Module

- Recognizes input transitions in less than 25µS
- Provides per point CIPSync Timestamping with +/- 4µS accuracy
- Input Pattern Matching offers more flexibility in triggering Event Tasks
- Captures Input Pulses down to 10µS

1756-OB16IEF Fast 24vdc Output

- Responds to system transition commands in less than 25µS
- Configurable Durations for Fault Mode output behavior
- Integrated per point Pulse Width Modulation

1756-LSC8xIB8I 24vdc Low-Speed Counter

- Eight 40KHz counters provide an economical solution for applications requiring multiple counters
- Counters return Accumulated Counts, Average and Instantaneous Frequency and Pulse Widths
- Provides 8 isolated inputs for general purpose use or counter control functions
- Counters have 2 output windows that can be defined in either frequency or counts

LISTEN. THINK. SOLVE.®

Typical Applications

Together with the ControlLogix 5570 controller, these modules provide performance that is scalable and configurable and expand the ControlLogix offering further into counting and high speed sequential applications than ever before.

Individual I/O Module Control with ControlLogix PAC

While Peer-to-Peer I/O Control delivers the most dramatic screw-to-screw performance, this is not necessary for every application. The high performance I/O modules deliver significant performance improvements for other high speed sequential applications as well. Example use cases include:

Glue Gun Control Applications

- Hardware: 1756-OB16IEF with ControlLogix PAC
- Configurable Cycle Limit feature prevents glue "globs" in the event of a line stoppage

Hot Backup Applications

- Hardware: 1756-OB16IEF with ControlLogix PAC
- Fault Mode Duration feature provides safe and flexible output behavior in a ControlLogix hot backup system
- Provides an additional level of output control during and after switchover

Time-Proportioned Control Applications

- Hardware: 1756-OB16IEF with ControlLogix PAC
- Built-in output stagger algorithm minimizes user power surges by adjusting Start of Cycle times on multiple outputs
- Pulse Width Modulation (PWM) On Time and Cycle Time tags are located in Output Tags and permits real-time control over pulse width based on PID calculations

First Fault Detection Applications

- Hardware: 1756-IB16IF with ControlLogix PAC
- Per point CIPSync Time-stamping with +/- 4µS accuracy and input pattern matching event task triggers allows for precise first fault detection

Peer-to-Peer I/O Control, Independent of Controller

When Peer I/O devices are used in combination, outputs on the 1756-OB16IEF module will energize within 50µS of input peer pre-conditions being met. Example use cases include:

Counter Applications

- Hardware: combination of 1756-LSC8xIB8I and 1756-OB16IEF
- Provides economical counting solution when multiple counters are required
- Filling Lines: Counter counts pulses from up to 8 flowmeters while 1756-OB16IEF controls solenoid valves based on in-window counter configurations

"Detect, then Energize" Applications

- Hardware: combination of 1756-IB16IF and 1756-OB16IEF
- High Speed Parts Rejection
- Fast and symmetrical I/O turn on/turn off times coupled with the speed of the ControlLogix backplane permit quick input detection and output actuation for removal of bad parts

www.rockwellautomation.com

Power, Control and Information Solutions Headquarters

Americas: Rockwell Automation, 1201 South Second Street, Milwaukee, WI 53204-2496 USA, Tel: (1) 414.382.2000, Fax: (1) 414.382.4444
Europe/Middle East/Africa: Rockwell Automation NV, Pegasus Park, De Kleetlaan 12a, 1831 Diegem, Belgium, Tel: (32) 2 663 0600, Fax: (32) 2 663 0640
Asia Pacific: Rockwell Automation, Level 14, Core F, Cyberport 3, 100 Cyberport Road, Hong Kong, Tel: (852) 2887 4788, Fax: (852) 2508 1846

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