

PRODUCT BULLETIN



PLC IO Interface

Key Features



Ease of use – The PLC IO Interface can be easily integrated with modern process automation systems. The compact, rugged industrial module is easy to install and set up. The PLC Explorer Utility makes configuration of the interface and system migration quick and easy.

Performance – With the Industrial Ethernet interface, IO throughput and scan times are excellent and capable of closed loop control. The PLC IO Interface is a solution that will allow migration of existing PLC IO with performance like native IO.

Openness – The Industrial Ethernet interface uses the Modbus TCP/IP protocol (www.modbus-ida.org) for open connectivity to modern control systems. The Industrial Ethernet interface even allows IO access from multiple controllers that support the Modbus TCP/IP protocol.

Designed and optimized for process control, upgraded control systems can use the signals from the proprietary IO network like native IO. Redundant configurations are available for Modicon S908 and GE Genius Remote IO.

Introduction

The PLC IO System Interface is a hardware and software solution that allows migration to modern process automation systems from legacy proprietary PLC IO systems such as GE Genius Bus, Modicon S908 Remote IO, and Allen-Bradley 1771 Remote IO.

This allows the user to complete an automation migration without having to replace the existing PLC IO systems.

System Architecture

The PLC IO Interface functions as a Modbus TCP/IP Slave and allows simultaneous communications with up to 8 Modbus TCP/IP Masters. Two of the Modbus TCP/IP Masters can write output IO values and use a captive network connection with a watch-dog timer. See Figure 1 below.

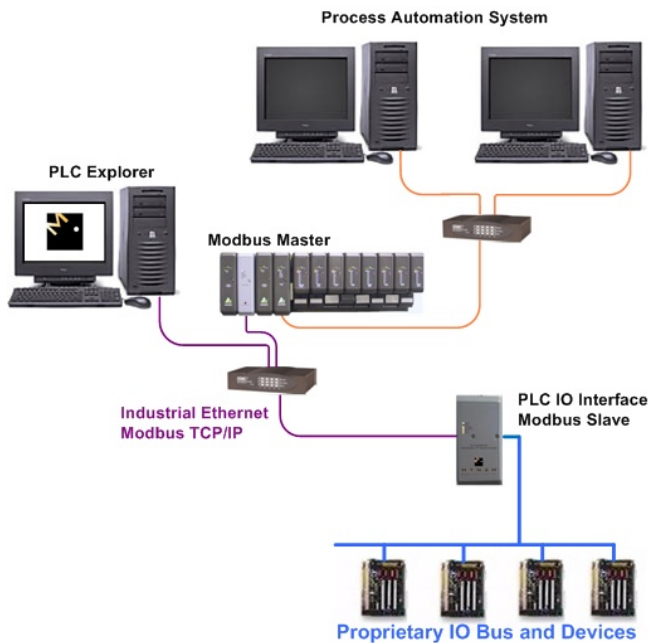


Figure 1: PLC IO Interface connection to DeltaV system with a CAT5 ModbusTCP/IP connection using wiring and Ethernet switch

DeltaV users may also use the Series 2 Programmable Interface Module, VE4006P2, to communicate between the PLC IO Interface and a DeltaV system over two 500K baud RS485 connections. The PLC IO Interface comes with the Programmable Interface Module Driver Firmware used to flash the DeltaV Programmable Interface to communicate with the PLC IO Module.

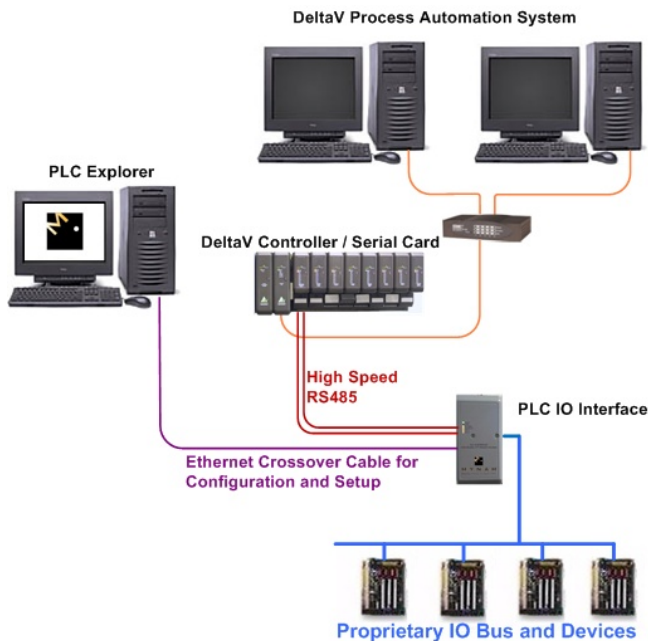


Figure 2: Series 2 DeltaV Programmable Interface Module VE4006P2 connection to DeltaV system over two 500K baud RS485 connections

Each PLC IO Interface connects to one PLC Remote IO network. Please refer to the manufacturer's guidelines for distance limitations or installation recommendations for the PLC Remote IO Networks.

PLC IO Interface Module

The PLC IO Interface Module is shipped with a DIN-rail mounting carrier that mounts to G or T-type DIN rails and includes the IO and power connectors. Wiring is easy because the high-speed serial connection, the IO System Interface, and the 24VDC power supply are on removable screw-down connectors. LED indicators allow quick assessment of the health of the power supply, the interface CPU, the remote IO network communications, and communications to the host process automation system.

PLC IO Interface Software

PLC Explorer Configuration Tool - The PLC IO Interface comes with the PLC Explorer configuration software. This software can run on the DeltaV ProPlus node or any PC network connected to the ProPlus or App Station node. The PLC Explorer makes setup of the PLC network and DeltaV Modules easy and quick.

The PLC Explorer configuration provides the following capabilities:

- Drag-and-drop PLC IO Network configuration.
- Setup of all configuration parameters for existing PLC IO modules including block transfer reads and writes.
- Download setup and IO device configuration through the Ethernet connection on the PLC IO Interface Module.
- GE Genius IO may upload block configuration from Remote IO blocks through the Ethernet connection on the PLC IO Interface Module.
- Generates DeltaV Configuration (.fhx file) for Programmable Card DataSet Definition, Interface Composite Modules automatically.

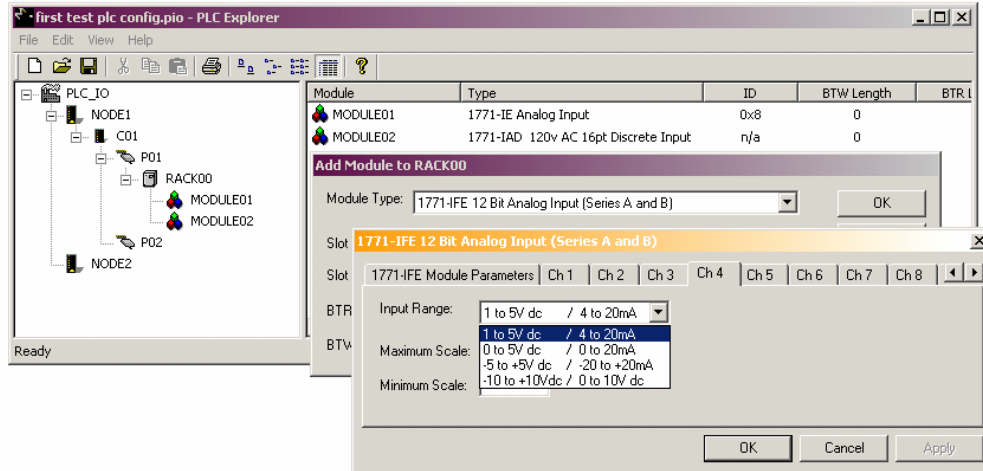


Figure 3: Configuration of Allen-Bradley 1771 Remote IO, 1771-IFE Analog Input Modules, in PLC Explorer.

DeltaV IO Interface Modules and Dataset Integration

The IO module signals from the PLC IO network are read into dataset registers. DeltaV Modules generated by the PLC Explorer Utility read these registers and convert them into external reference IO signals. Those signals can be used by other DeltaV control modules, displayed on DeltaV Operate screens, or included in the DeltaV historian or event chronicle.

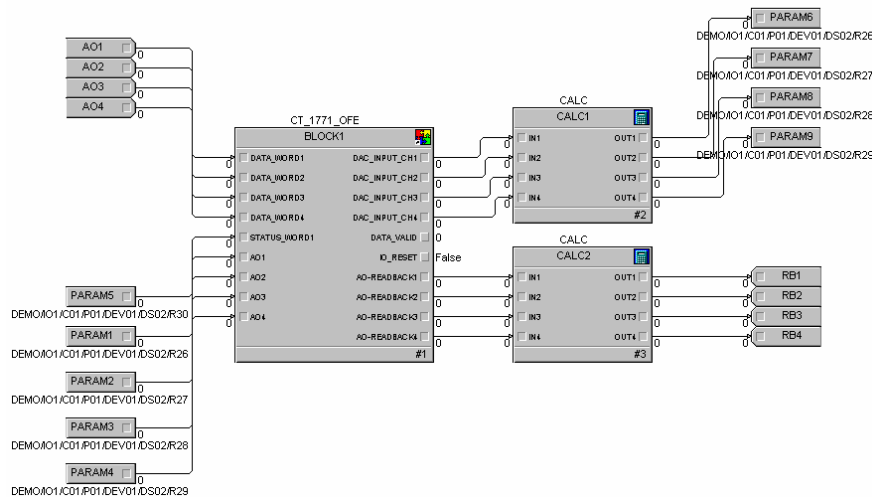


Figure 4: DeltaV module generated by PLC Explorer for integration of Allen-Bradley 1771-OFE Analog Output Module.

PLC Remote IO Networks Supported

GE Genius Bus Interface

The PLC IO Interface functions as a Genius IO Bus Controller. The Genius Bus address is by default set to 31. It handles all data transfer functions between the DeltaV and the Genius IO bus, allowing DeltaV to control Genius IO and read device diagnostic information. It performs the housekeeping tasks of initialization and fault management for up to 31 Genius bus devices.

The auto-configure feature of PLC Explorer allows the user to interrogate and upload the configuration of all connected and powered Genius blocks. This can save the user considerable engineering time on migration projects.

Each PLC IO Interface module supports up to 31 Genius Bus Devices configured in the DeltaV Explorer as two ports of 16 devices. It supports any combination of the following:

- Genius blocks – self-contained, configurable IO modules
- ABB TRIO blocks—self-contained, configurable IO modules

The PLC IO Interface will not support the following devices and functionality:

- Field Control IO Stations – consisting of a Bus Interface Unit and up to 8 Field Control modules
- Series 90-70 Remote IO Scanner – rack mounted module that can be used to interface a series 90-70 remote drop to a Genius Bus
- Controller-to-controller communication of datagrams, global data, or directed control data

Allen-Bradley 1771 Remote IO Interface

The PLC IO Interface functions as a Remote IO Master/Scanner. It handles all block-transfer of data and IO data movement between DeltaV and the Remote IO bus, allowing DeltaV to use Remote IO data like DeltaV IO. It supports network diagnostic functions for 1771 Remote IO. Each PLC IO Interface module supports up to 32 Remote IO Devices configured in the DeltaV Explorer as two ports of 16 devices.

The Remote IO Link supports the following 1771 specifications:

- Rack Number Addressing of 0 to 63
- Rack Size of $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$, and full rack
- Baud Rate of 57.6, 115.2 and 230.4K
- BTW Command – 64 words, BTR Command – 63 Words

Modicon S908 Remote IO Interface

The PLC IO Interface module handles 800 Series and Quantum IO. It handles all data transfer functions between the DeltaV and the Modicon Remote IO, allowing DeltaV to control Remote IO and read device diagnostic information. It performs the housekeeping tasks of initialization and fault management. Each PLC IO Interface module supports up to 32 Modicon remote IO drops configured in the DeltaV Explorer as two ports of 16 devices.

The Remote IO link supports the following specifications:

- 800 Series IO, each drop contains up to 5 racks with 11 slots per rack
- Quantum 10, each drop contains up to 1 rack with 16 slots per rack

Redundancy Support

GE Genius Bus Interface

The PLC IO Interface for GE Genius IO can be configured as a redundant pair. This configuration provides security against one single point of failure taking down the entire Genius Bus. In this configuration, two modules and two software licenses are required.

A summary of the requirements for installation of redundant units is as follows:

- Primary and Secondary PLC IO Interface Modules should be addressed at Genius address 31 and 30, respectfully.
- The Primary and Secondary Modules should be mounted side-by-side with the RJ11 Serial Cable (furnished by MYNAH) connecting the two units.
- The Modules should be configured and commissioned in PLC Explorer as a redundant pair.
- The host device should be redundant. This can be either a redundant Modbus TCP/IP Master such as the DeltaV Virtual IO Module Network Gateway or redundant DeltaV Serial Modules.

Allen-Bradley 1771 Remote IO Interface

Redundancy is not supported for the PLC IO Interface for Allen-Bradley 1771 Remote IO due to limitation with the Remote IO protocol.

Modicon S908 Remote IO Interface

The PLC IO RS485 Interface for S908 Remote IO can be configured as a redundant pair. This configuration provides security against one single point of failure taking down the entire S908 Bus. In this configuration, two modules and two software licenses are required.

A summary of the requirements for installation of redundant units is as follows:

- Primary and Secondary PLC IO Interface Modules should be attached to the DeltaV Redundant Serial Modules.
- The Primary and Secondary Modules should be mounted side-by-side with the RJ11 Serial Cable (furnished by MYNAH) connecting the two units.
- The Modules should be configured and commissioned in PLC Explorer as a redundant pair.
- The host device should be redundant. This can be redundant DeltaV Serial Modules.

Product Specifications

Environmental Conditions

Power Requirements	9 to 28 VDC, 0.35 Amp maximum
Operating Temperature	0° to 50° C (32° to 122° F)
Electrical Approvals	CE Certified

Dimensions

DIN-Rail Mounting Base	3-5/16 in. (8.41 cm) w x 6-1/2 in. (16.5 cm) h x 1-1/16 in. (2.7 cm) d
Interface Module	4-3/8 in. (11.11 cm) w x 6-1/2 in. (16.5 cm) h x 4-3/8 in. (11.11 cm) d

LED Indicators

Green – Power	Indicates DC power is applied
Red – Fault	Indicates an error condition
Amber – Run Mode	On Solid – unit is in Run Mode Off – unit is in Program Mode
Amber – Remote IO	On Solid – RIO Configuration/Communications Good Blinking – RIO Configuration Mismatch or Communication Errors
Amber – Port 1	ModbusTCP: On Solid – Connection active Off – No connections. RS485: On Solid – P1 Communication with DeltaV good Blinking – P1 Communications with DeltaV bad
Amber – Port 2	ModbusTCP: Blinking – Communicating, blinks on each message. Off – No messages received. RS485: On Solid – P2 Communication with DeltaV good Blinking – P2 Communications with DeltaV bad

External Connections

24 VDC Power Supply	2-PIN Removable plug connector (top of unit)
RIO Bus Cable	6-PIN Removable plug (1771, Genius) or F-Style coax connector (Modicon) (right side of unit)
RS-485 (DeltaV Serial Card)	(2) 3-PIN Removable plug connectors (left side of unit)
RS-485 Cable Specification	Belden 3108A, limited to 200 feet (60 meters) or less
Redundant Module Communication Link	RJ-11 Female Socket (top of unit)
100 MBaud Ethernet	RJ-45 Female Socket (left side of unit)

Modbus TCP/IP Connection

Protocol	RTU TCP Slave
Connections	6 Master Connections for Read Access Only 2 Master Connections for Read/Write Access with open connections and watch-dog timer
Security	Configurable Read/Write Permission Table (IP Address) in PLC Explorer

DeltaV System Requirements

Software Requirements

The following are the minimum DeltaV software requirements for the PLC IO Interfaces:

- DeltaV System Software (Release 6.3 or later)
- DeltaV Serial Interface Port License, Model VE4102. 2 required for each PLC IO Interface (not required for DeltaV v9.3 and later).

Hardware Requirements

The following are the minimum DeltaV hardware requirements for the PLC IO Interfaces:

- DeltaV MD Controller, Power Supply, and 2-Wide Controller Carrier
- DeltaV 8-Wide I/O Card Carrier
- Modbus TCP/IP Interface – MYNAH Technologies Virtual IO Module, MIM-4207, and Modbus TCP/IP Driver, IOD-4101
- Serial Interface - DeltaV Series 2 Programmable Interface Card, Model VE4006P2

Ordering

The product numbers in the table below are for the complete PLC IO Interface. The Interface Module and a mounting carrier are shipped with each purchase. DeltaV Programmable Interface Driver firmware and PLC Explorer Configuration Tool Software are included with each purchase. All software is distributed on a CD and is subject to MYNAH Technologies Software License Agreement. A completed MYNAH software registration form is required before shipment. 90 days technical support from the date of shipment is included with each purchase.

Item	Description
IOD-5101	PLC IO Interface for GE Genius Remote IO License
IOD-5102	PLC IO Interface for Allen Bradley 1771 Remote IO License
IOD-5103	PLC IO Interface for Modicon/Quantum S908 Remote IO License
IOD-5201	PLC IO Interface for GE Genius Remote IO Module (Requires an IOD-5101)
IOD-5202	PLC IO Interface for Allen Bradley 1771 Remote IO Module (Requires an IOD-5102)
IOD-5203	PLC IO Interface for Modicon Quantum S908 Remote IO Module (Requires an IOD-5103)



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