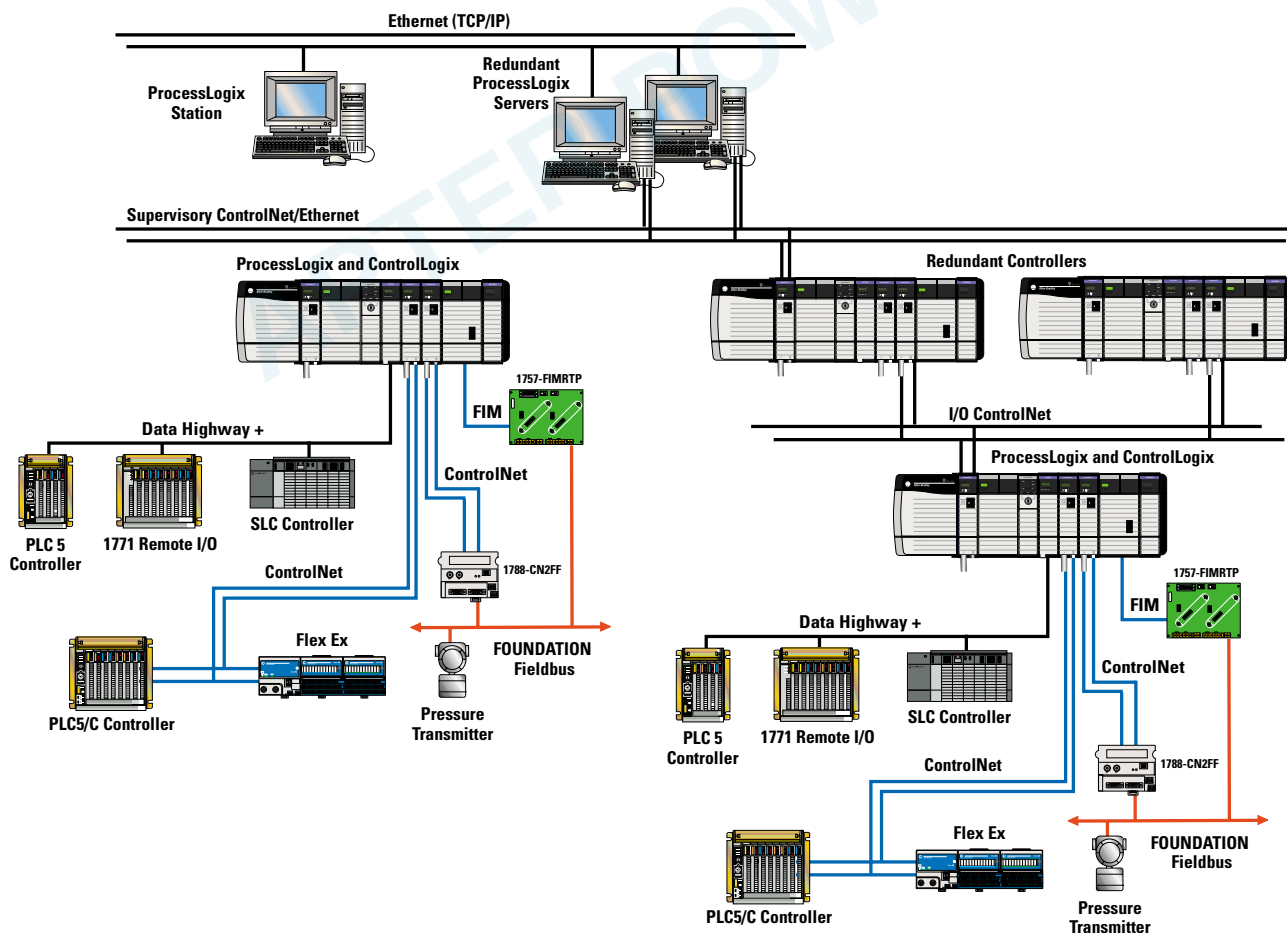


Fieldbus Integrated Architecture

As shown in Figure 2.1, Foundation Fieldbus devices can be connected or integrated into a Rockwell Logix system. ProcessLogix, Release 400.0 and later can be configured with a Fieldbus Interface Module (FIM). The FIM serves as the communication gateway between the Supervisory ControlNet/Ethernet and/or I/O ControlNet network and the Foundation Fieldbus H1 communications medium. It works with a Remote Termination Panel (RTP) for connecting and powering up to two fieldbus H1 links.

For applications that require a more highly distributed connection and/or communications directly with a PLC5 or ControlLogix 5500 processor, you can use the 1788-CN2FF ControlNet to Foundation Fieldbus Gateway device.

Figure 2.1 Logix system architecture for Fieldbus integration.



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Fieldbus Interface Modules - The Key to an Integrated System

The 1757-FIM, Fieldbus Interface Module is the key to bringing the Foundation Fieldbus system into a ProcessLogix system. The FIM has been designed to operate as a stand-alone Foundation Fieldbus interface or as a bridge between the ProcessLogix control environment and the fieldbus devices. It supports both the publish/subscribe and the client/server communication methods to communicate with fieldbus function blocks. The control connections must be downstream only.

The FIM is a doublewide module that plugs into a non-redundant Controller or remote I/O chassis. It connects up to two Fieldbus H1 links through a companion Remote Termination Panel (RTP). These independent links each have their own link schedule, link master and time master functions. The RTP is designed for DIN rail mounting within an enclosure. It optionally accepts a 24 Vdc input from an external power supply to provide low-level power to fieldbus devices on the H1 links.

The Fieldbus Interface Module functions as a dual network bridge using a dynamic data cache to facilitate the exchange of data between the ControlNet/Ethernet network and the Fieldbus H1 links. It supports both publish/subscribe and client/server communications methods to implement control connections between ProcessLogix function blocks and fieldbus function blocks.

FIM capability includes converting ProcessLogix value-status structure to fieldbus value-status by mapping similar fields to one another and defaulting others. This means ProcessLogix can monitor fieldbus control functions, fully integrate with control functions, or provide a combination that includes using fieldbus based control as backup for selected ProcessLogix control functions.

The FIM uses low and high priority send queues to make sure that publish/subscribe data normally used for control is processed before less important display access data. Publish/subscribe requests are placed in the high priority send queue and client/server requests are placed in the low one.

FIM and I/O module allowance

Be sure your ProcessLogix System Fieldbus and I/O requirements do not exceed the capacities listed in the following table. In terms of processing allocations, the FIM is the equivalent of three I/O modules.

Table 3.B

Component	Total Per Controller	Total Per Server
Maximum number of FIMs plus I/O modules divided by three (including local and remote chassis I/O and rail I/O).	21	100
Maximum number of H1 links (independent LAS)	42	200
Maximum number of fieldbus devices ⁽¹⁾	672	3,000

⁽¹⁾ Each H1 link is capable of supporting (a practical limit) at least 16 fieldbus devices. This number may vary depending on the dynamics of the link.

Fieldbus network references

Please refer to the following publications for guidance in designing and implementing the fieldbus network to be interfaced to the ProcessLogix system through the FIM and its companion Remote Termination Panel (RTP).

Table 3.C

Publication Number/Title	Scope	Source
AG-140 / Wiring and Installation 31.25 kbit/s, Voltage Mode, Wire Medium Application Guide	Overview of what you need to know to wire, power, and layout network components	Fieldbus Foundation 9390 Research Blvd. Suite II-250 Austin Texas 78759-9780 www.fieldbus.org
AG-165 / Fieldbus Installation and Planning Guide	Outlines things to consider before installing a fieldbus network	Fieldbus Foundation 9390 Research Blvd. Suite II-250 Austin Texas 78759-9780 www.fieldbus.org
Relcom Inc.	Provides fieldbus wiring products, wiring design and installation data. Offer a free Fieldbus Wiring Design and Installation Guide you can download.	Visit the Relcom Inc. website www.relcominc.com

Fieldbus wiring selection and calculation

The preferred cable for connecting fieldbus devices is #18 AWG (0.8mm²) shielded, twisted pair wire. It is important to calculate how the planned topology for your fieldbus segment, selected wiring, supplied power and intended mix of fieldbus devices may impact the overall performance of a fieldbus network.

The original Fieldbus specification allows using twisted pair wiring, which is commonly used for 4-20 ma transmitters.

TIP

We can't emphasize enough the use of high quality network (wire) installation. The higher quality of installation materials the better performance you will achieve in your network application

Universal manufacturers sell "Fieldbus cable" which meets all the specifications required for "Fieldbus cable".

Windows based, Fieldbus Segment Calculator tools are available in the market place that can assist you in calculating the performance characteristics of a planned fieldbus segment.

See Appendix D for a condensed overview of fieldbus wiring considerations provided for convenient reference. This information does overlap some information that is found in other data references as well.

Installing 1757-FIM Fieldbus Interface Module

Refer to the 1757-FIM Installation Instructions, publication 1757-IN0913A-EN-P.

Installing 1757-RTP Remote Terminator

Refer to the 1757-RTP Installation Instructions, publication 1757-IN915A-EN-P.