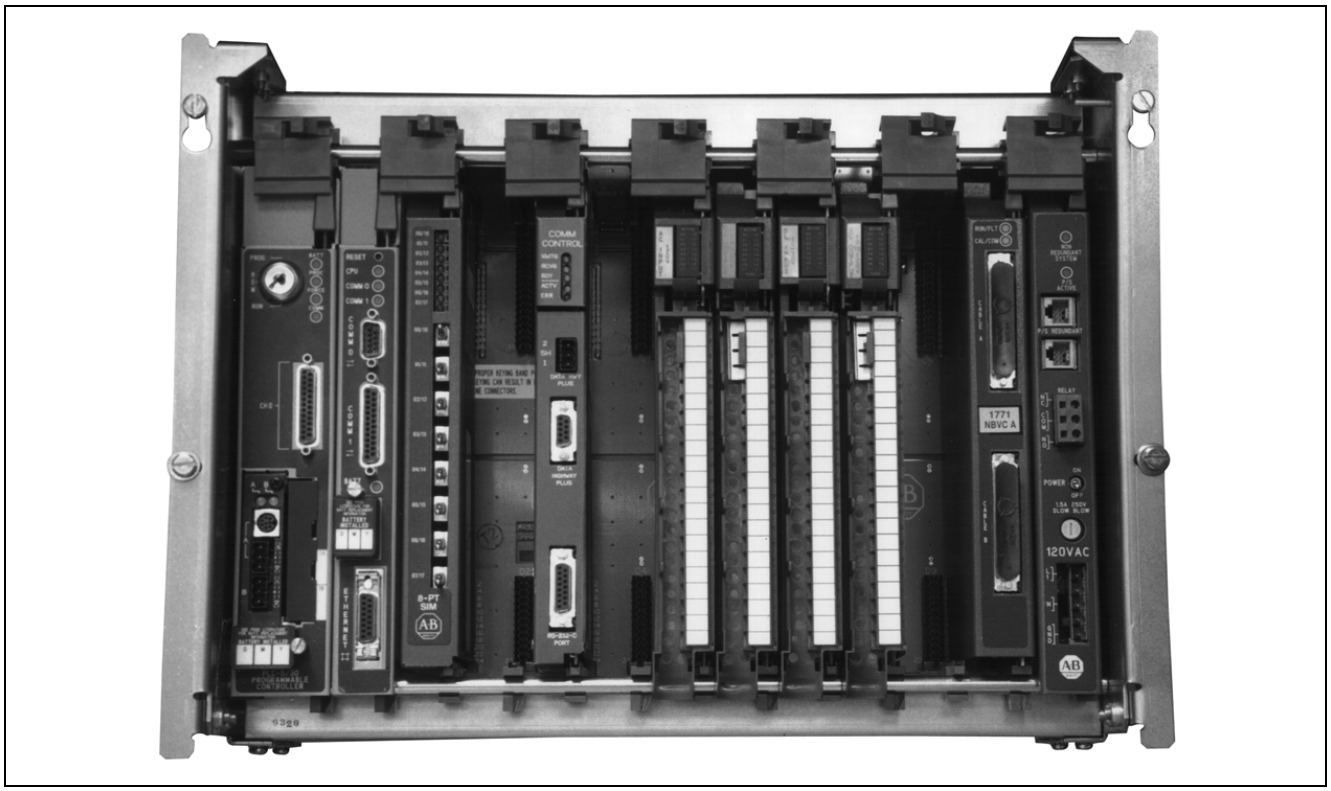
FOXBORO®

PSS 21H-1F1 B3

I/A Series® Hardware
Allen-Bradley Station



The Allen-Bradley Station incorporates an Allen-Bradley PLC-5 platform into the I/A Series architecture without the use of gateways.

OVERVIEW

The I/A Series Allen-Bradley (A-B) Station provides a hardware and software platform that allows seamless integration of Programmable Logic Controller (PLC) data into the I/A Series architecture. It consists of the Allen-Bradley Programmable Logic Control (PLC-5) series, operating as a full I/A Series station on the I/A Series Nodebus as shown in (Figure 1).

The A-B Station allows unified implementation of closely coupled continuous, sequential and discrete control strategies, utilizing I/A Series Control Processors for optimal process control and Allen-Bradley PLC processors for optimal motor logic control, such as safety interlocking, permissives and device functions.

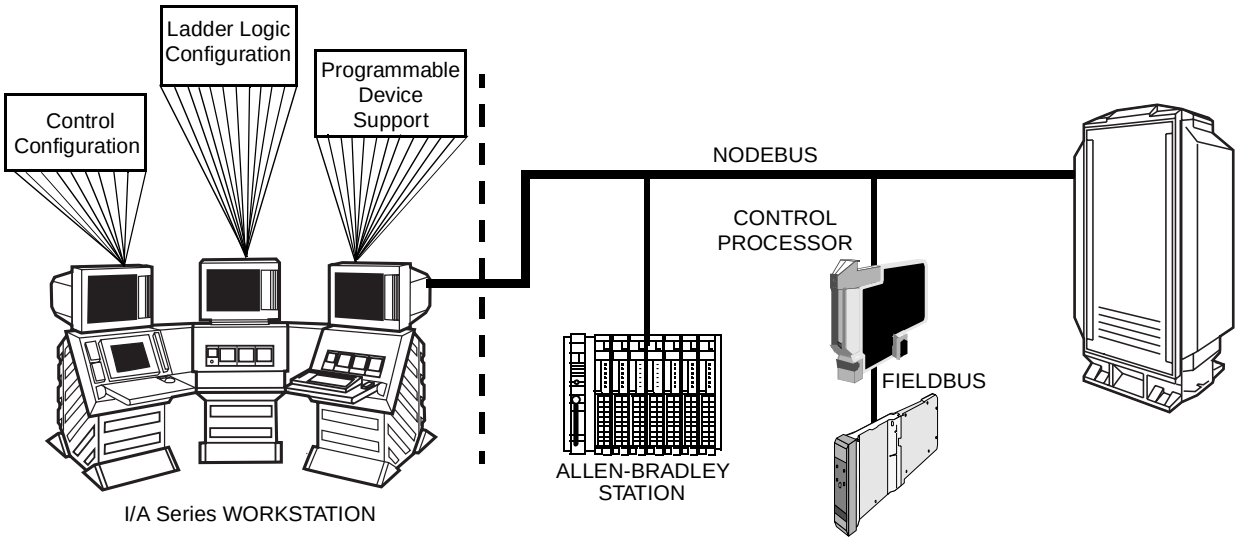


Figure 1.

Features

The A-B Station, in addition to providing seamless integration of PLC data, has the following distinct features:

- Scalable configurations ranging from small PC-based systems to large multi-node systems.
- Peer-to-peer connections to Control Processors and other A-B Stations.
- Direct memory access (DMA) between I/A Series and the PLC data table for greater throughput performance and a greater level of data security.
- An option which provides configuration, on-line auditing and maintenance of PLC applications.

FUNCTIONAL SPECIFICATIONS

The functionality offered by the A-B station includes block processing, station management, data access routines and block processing. The A-B Station module, operating I/A Series software, physically bolts to the following PLC-5 series processor families providing a direct memory access (DMA) interface to the PLC data tables:

- PLC-511
- PLC-520 and PLC-520E
- PLC-530
- PLC-540, PLC-540E and PLC-540L
- PLC-560 and PLC-560L
- PLC-580 and PLC-580E

A communication interface to a Dual Nodebus Interface (DNBI) or Extended Dual Nodebus Interface (DNBX) module (PSS 21H-7B2 B4) allows the A-B Station to communicate on the I/A Series redundant Nodebus.

Control Software

The A-B Station module configuration contains 4 MB of RAM memory that is used by the processor software and the I/A Series database. A set of digital and analog I/O blocks act as data stores for the PLC data.

Strategies can be designed, configured and implemented through a common, object-based control configuration package. A comprehensive configuration tool allows you to configure Allen-Bradley PLC-5(s) directly from a I/A Series workstation. The configuration tool includes ladder logic configuration, uploading and downloading of PLC processor images, and other important features.

The control software functionality includes:

- Compound processor
- Database install and access routines
- Alarm message handler
- Checkpoint
- Message-pass-through.

System Management Support

The role of System Management support is to monitor the health of communications to the PLC processor, and update the appropriate ECB(s) to reflect this status. These tasks include:

- Reading the configuration data from the PLC processor and making this data available for other station tasks.
- Updating the configuration data when an operator-initiated action is requested from Systems Management.
- Initiating a message to the PLC processor to update its date and time every ten minutes, (for example, every time the Master Timekeeper updates the station clock).
- Updating the peripheral counters in the Equipment Control Blocks for the Station Manager.

The system health displays for the A-B Station show the PLC processor and its associated I/O racks. These displays can be used to report the status of PLC-5 I/O and to connect or disconnect communication paths to the PLC processors.

Equipment Control Blocks

Two Equipment Control Blocks (ECBs) contain information and statuses specific to the A-B PLC, PLC racks and I/O cards. The ECBs will also allow operator-initiated messages, for example, checkpoint and reboot, to be acted on by the station.

Block Types

Support exists for both input and output to PLC data for the following I/A Series block types:

AIN	CALC	MCOUT	PLCIO
ALMPRI	CIN	MROUT	PLSOUT
AOUT	COUT	PAKIN	REALM
BLNALM	MAIN	PAKOUT	ROUT
BOUT	MCIN	PATALM	SYS

DIAGNOSTICS

The A-B Station utilizes three types of diagnostics to detect and/or isolate faults:

- Power-up self-checks
- Run-time and watchdog timer checks
- On-line diagnostics (cable tests).

PACKAGING AND ARCHITECTURE

Refer to the A-B Station Module Installation Guide.

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