EcoStruxure™

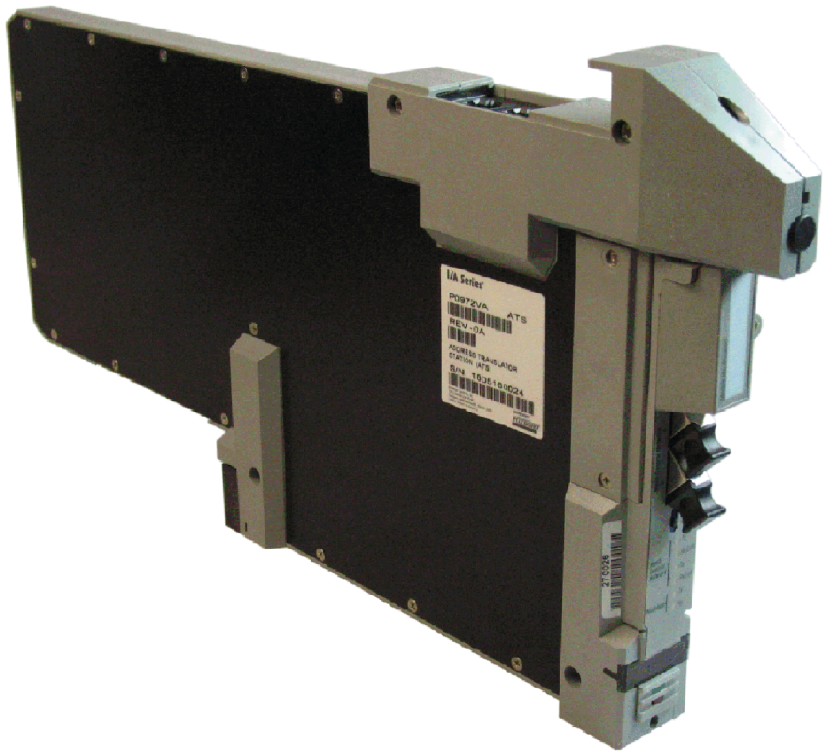
Foxboro DCS

Address Translation Station Communications

PSS 41H-1ATS

Product Specification

November 2018



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Legal Information

Overview

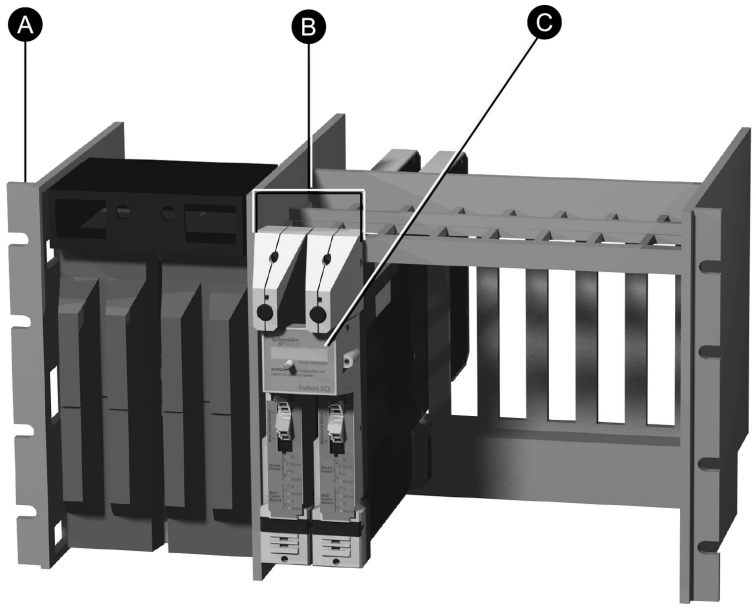
The Address Translation Station Communications is a bridge between existing Foxboro DCS system (or I/A Series system) Nodebus stations and the EcoStruxure Foxboro DCS Control Network (the control network) stations.

The Address Translation Station (ATS) allows extension of I/A Series system Nodebus based systems with the Foxboro DCS system control network stations. The ATS allows Nodebus based control stations to seamlessly communicate with stations on the control network and vice-versa. The ATS transparently forwards communication from the Nodebus side without requiring any software changes to the Nodebus stations. Similarly network traffic from the control network side of the ATS is transparently forwarded to Nodebus stations.

The redundant version of the ATS modules consist of two single-width modules. These modules install in adjacent slots in a 1x8 or 2x8 mounting structure and connect to a redundancy connector (see Figure 1).

An ATS requires a workstation connected to the control network as a host. Interprocess Communications (IPC) between the control network and Nodebus stations to pass compound and block parameter data is supported. Boot hosting of Nodebus stations from control network workstations is not supported. For more information on The Foxboro DCS Control Network Architecture, refer to PSS 41H-7NETWORK.

Figure 1. Redundant ATS Module Pair Mounted in 1x8 Mounting Structure



Legend	
A	1x8 Mounting Structure
B	Redundant ATS Modules
C	Redundancy Connector

Features

- Connects the control network stations, via standard fiber optic or copper cable, 100 Mbps Fast Ethernet to existing I/A Series system Nodebus stations
- Allows the control network workstations and controllers to communicate with existing I/A Series system Nodebus stations
- Allows “extending” an existing Nodebus-based I/A Series system with FCP270 and ZCP270 control stations
- Available in single or redundant configuration
- Replaces LAN Interfaces on a Carrierband network using the high speed control network as the communications backbone between nodes
- Provides connection to a higher speed communications backbone. Reduces the network load on the Carrierband network and provides a higher capacity backbone
- Permits IP communication between stations on the node and stations on other nodes whose LAN Interfaces have been replaced with the ATS
- Uses soft letterbugs configurable via the Letterbug Configurator.

Enhanced Reliability (Redundancy)

The redundant version of the ATS consists of two modules. In this configuration, one ATS is the primary module, and the other is the backup module. The two modules pass health and state information between themselves via the network and a local interlink. If the backup module does not receive a periodic “I’m OK” from the primary module, it assumes the primary ATS responsibilities. Role switching is automatic when problems are detected by the modules.

Enhanced Communications

The Foxboro DCS control network uses Fast Ethernet switches with 100 Mbps data communications between the ATS and the Ethernet switches (see *Figure 4, page 7*). The Fast Ethernet switches use 1 Gbps for high speed interswitch communication. The ATS uses 10 Mbps to communicate with the I/A Series system Nodebus stations.

LED Indicators

Light-emitting diodes (LEDs) on the ATS module provide visual indication of the:

- ATS operational status
- Communications activity of Fast Ethernet control network A and B links
- Communications activity of the I/A Series system Nodebus.

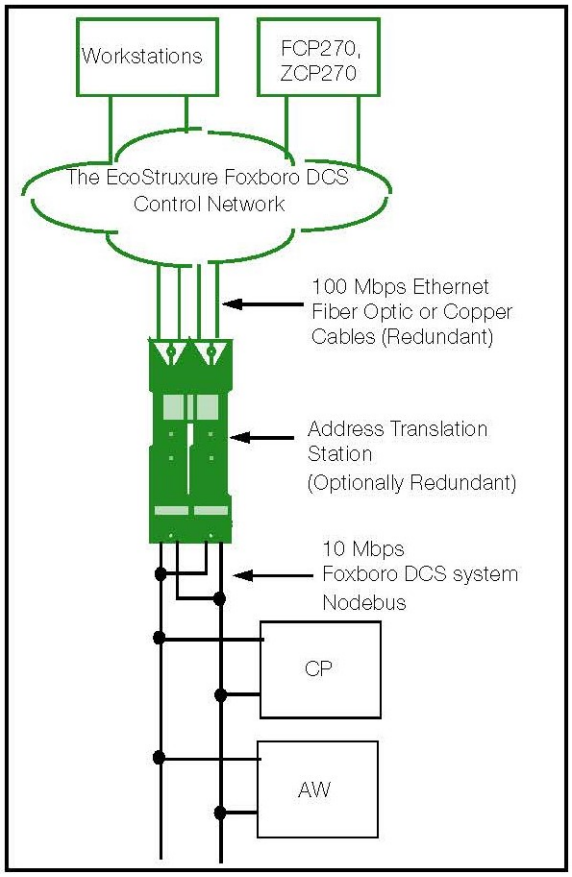
Modes of Operation

The ATS supports two modes of operation: running as a LAN Interface (LI) or running as a Nodebus extender. In the Nodebus extender mode, stations on the node appear to be local to the ATS and through the LI mode stations appear to be extended to an ATS. A multi-node I/A Series system can be connected to only one control network.

LAN Interface (LI) Mode

An ATS operates in the LI mode when there isn't an LI on the same node. In this mode, the ATS operates as an LI for the node (see Figure 2).

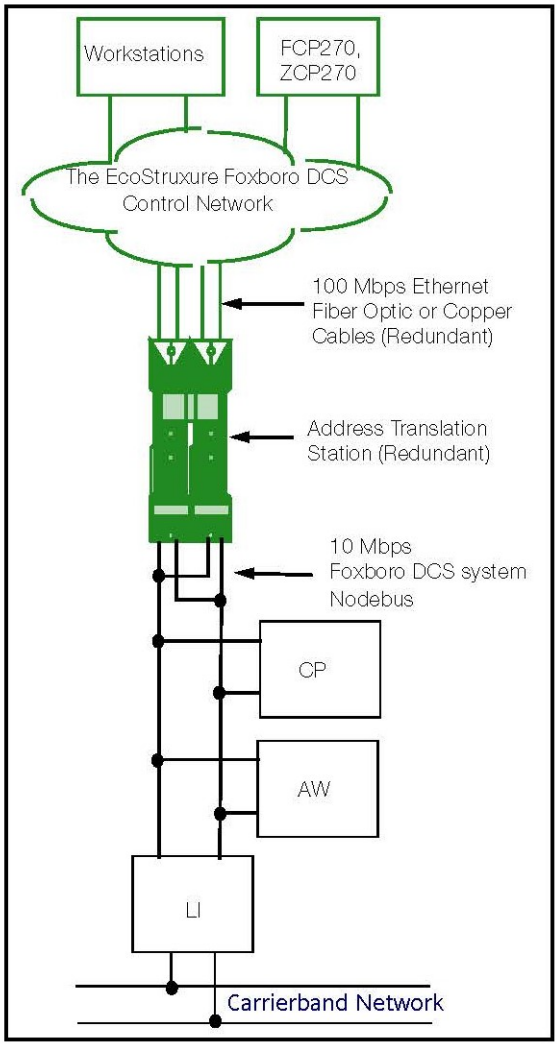
Figure 2. ATS in LI Mode



Nodebus Extender Mode

An ATS operates in the extender mode when there is an LI on the same node. Stations on the control network appear to be on the same node as the Nodebus stations. Therefore, the ATS makes the control network appear as an extension of the node (see Figure 3).

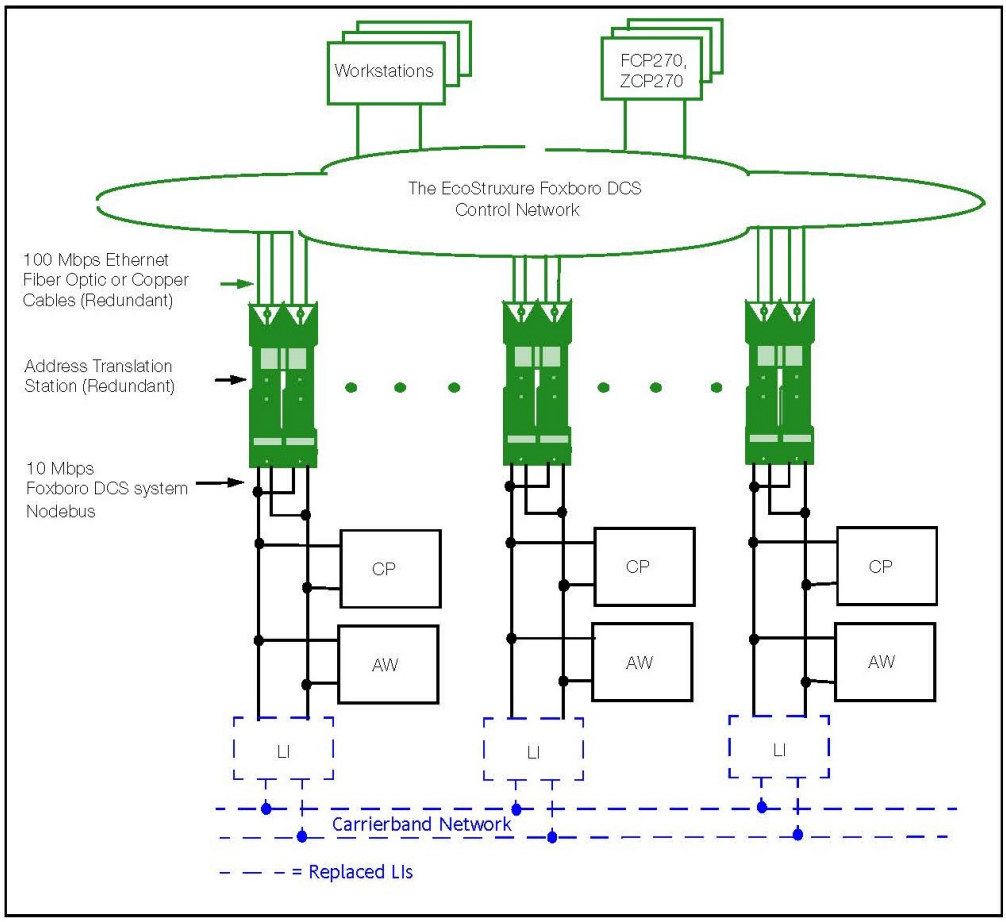
Figure 3. ATS in Nodebus Extender Mode



Carrierband Migration Topology

Figure 4 shows a complete migration of a multinode I/A Series system to the Foxboro DCS control network where the 5 Mb token bus has been replaced by the high speed control network.

Figure 4. Nodebus Migration to the Foxboro DCS Control Network



Functional Specifications

Transmission	• Rate: 100 Mbps full - duplex to/from Fast Ethernet switch 10 Mbps CSMA/CD to/from I/A Series system Nodebus • Packets: Up to 1000 packets per second
Number of Stations	• I/A Series System Nodebus: Up to 63 stations on the Nodebus per ATS • The Foxboro DCS Control Network: Up to 1920 stations (Nodebus stations and the control network stations)
Time to Switch Redundant Modules	<1s
Minimal Control Network	Requires an ATS (optionally redundant), a control network based workstation to host the ATS and the control network Ethernet switches
Internal Diagnostics	Self-checking performed at power-up. Run-time checks and the watchdog timer function performed during operation.
Infrared Communications	Letterbug assignment via the Letterbug Configurator. Letterbug or Hardware ID readout via the Letterbug Configurator.
Power Requirements	• Input Voltage (Redundant Voltage): 39 V dc typical • Consumption (Per Non-Redundant Module): 15 W, maximum

Regulatory Compliance CE Certification	For the ATS to meet CE certifications required in European installations, a shielded enclosure is required as described in *Power, Earthing (Grounding), EMC and CE Compliance* (B0700AU).
Regulatory Compliance Electromagnetic Compatibility (EMC)	• *European EMC Directive 89/336/EEC* Meets: EN 50081-2 Emission standard; EN 50082-2 Immunity standard; EN 61326 Annex A for Industrial Environments • *CISPR 11, Industrial Scientific and Medical (ISM) Radio-frequency Equipment - Electromagnetic Disturbance Characteristics - Limits and Methods of Measurement* Meets: Class A Limits • *IEC 61000-4-2 ESD Immunity* Contact 6 kV, air 8 kV • *IEC 61000-4-3 Radiated Field Immunity* 10 V/m at 80 to 1000 MHz • *IEC 61000-4-4 Electrical Fast Transient/Burst Immunity* 2 kV on I/O, dc power and communication lines • *IEC 61000-4-5 Surge Immunity* 2kV on ac and dc power lines; 1kV on I/O and communications lines • *IEC 61000-4-6 Immunity to Conducted Disturbances Induced by Radio-frequency Fields* 10 V (rms) at 150 kHz to 80 MHz on I/O, dc power and communication lines • *IEC 61000-4-8 Power Frequency Magnetic Field Immunity* 30 A/m at 50 and 60 Hz

Environmental Specifications(1)

	Operating	Storage
Temperature	0 to 60°C (32 to 140°F)	-40 to +70°C (-40 to +158°F)
Relative Humidity	5 to 95% (Noncondensing)	5 to 95% (Noncondensing)
Altitude	-300 to +3,000 m (-1,000 to +10,000 ft)	-300 to +12,000 m (-1,000 to +40,000 ft)
Vibration	0.5 g (5 to 500 Hz)	0.5 g (5 to 500 Hz)

(1) The environmental ranges can be modified by the type of enclosure containing the module. {Refer to the applicable Product Specification Sheet (PSS) which describes the specific enclosure that is to be used.}

Physical Specifications

Configuration	Single-width module. The redundant version consists of two single-width processor modules, with an interconnecting redundant connector.
Weight (Maximum)	1.7 kg (3.75 lb) for a single, non-redundant module.
Mounting	May be placed in any of these I/A Series system mounting structures: • 1x8 Mounting Structure • 2x8 Mounting Structure In the redundant version, the two modules must be mounted in adjacent mounting structure slots to allow for installation of the redundant connector.
Dimensions: Module	• Height: 228mm (8.97 in) • Width: 34.3 mm (1.35 in) • Depth: 447 mm (17.6 in)
Part Numbers	• ATS Module: P0972VA • Redundant Connector: P0926DF
Cabling — Ethernet Switch to ATS	Fiber Optic Cable: • Connectors: Two ceramic type LC connectors with clips on each end • Cable Material: Multi-mode fiber (MMF) 62.5/125 µm • Cable Lengths: 3.0 m (9.9 ft), 15 m (49.5 ft), 50 m (165 ft). Greater than 50 m – user supplied • Maximum Length: 2 km (6,560 ft) total from the Ethernet switch to the ATS. Copper Cable: • Connectors: RJ-45 connectors • Cable Material: Shielded copper cable • Cable Lengths: 0.5 m (1.6 ft), 3.0 m (9.9 ft), 15 m (49.5 ft), 50 m (165 ft), 100 m (330 ft) • Maximum Length: 100 m (330 ft) total from the Ethernet switch to the ATS.

⚠ **WARNING**: This product can expose you to chemicals including lead and lead compounds, which are known to the State of California to cause cancer and birth defects or other reproductive harm. For more information, go to www.p65warnings.ca.gov/.

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As standards, specifications, and design change from time to time, please ask for confirmation of the information given in this publication.

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