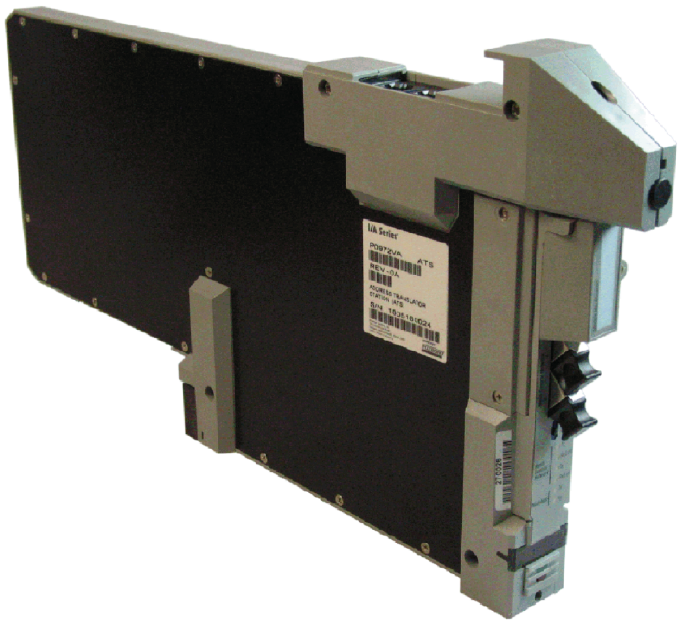
I/A Series® Hardware

PSS 21H-1C4 B3

Address Translation Station



The Address Translation Station is a bridge between existing I/A Series® system Nodebus stations and The MESH control network stations.

FEATURES

- Connects The Mesh control network stations, via standard fiber optic or copper cable, 100 Mbps Fast Ethernet to existing I/A Series system Nodebus stations
- Allows The Mesh 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 Mesh 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 I/A Series system Letterbug Configurator.

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OVERVIEW

The Address Translation Station (ATS) allows extension of I/A Series system Nodebus based systems with I/A Series system Mesh control network stations. The ATS allows Nodebus based control stations to seamlessly communicate with stations on The Mesh 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 Mesh 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 Mesh control network as a host. Interprocess Communications (IPC) between The Mesh control network and Nodebus stations to pass compound and block parameter data is supported. Boot hosting of Nodebus stations from Mesh workstations is not supported. For more information on The Mesh control network architecture, refer to PSS 21H-7C2 B3.

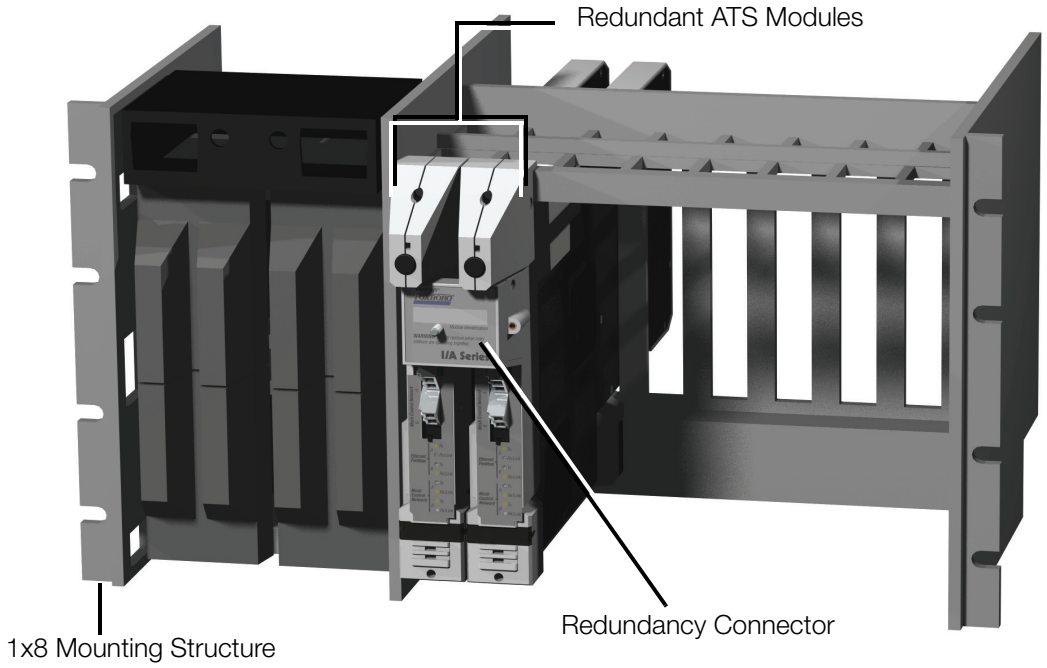

Figure 1. Redundant ATS Module Pair Mounted in 1x8 Mounting Structure

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 Mesh control network uses Fast Ethernet switches with 100 Mbps data communications between the ATS and the Ethernet switches (see Figure 4). 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 Mesh 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).

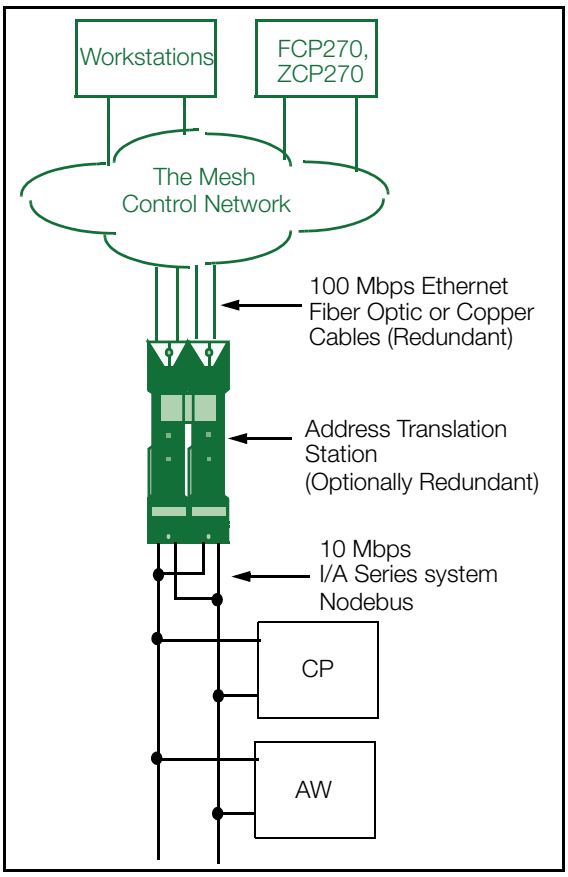

Figure 2. ATS in LI Mode

Nodebus Extender Mode

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

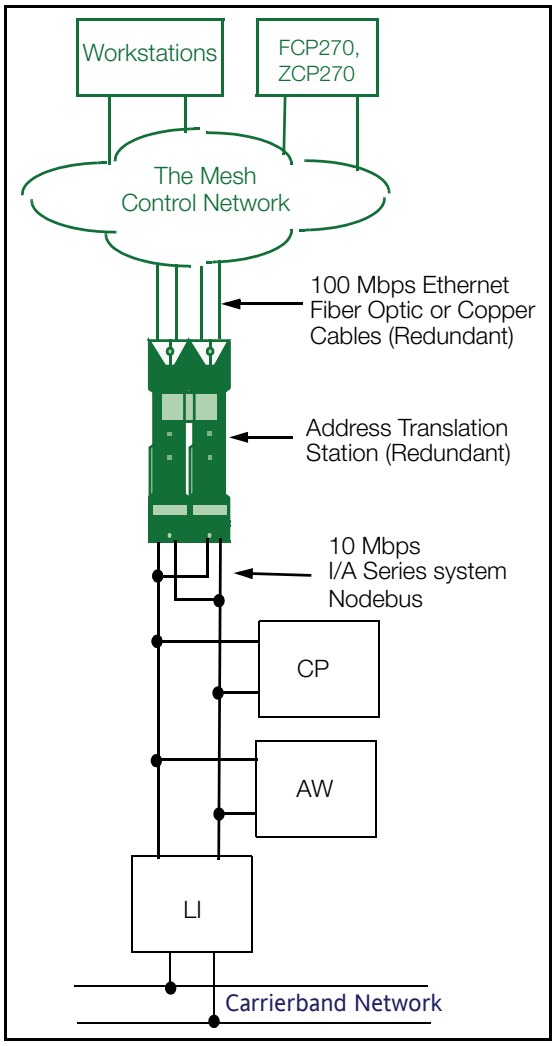

Figure 3. ATS in Nodebus Extender Mode

CARRIERBAND MIGRATION TOPOLOGY

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

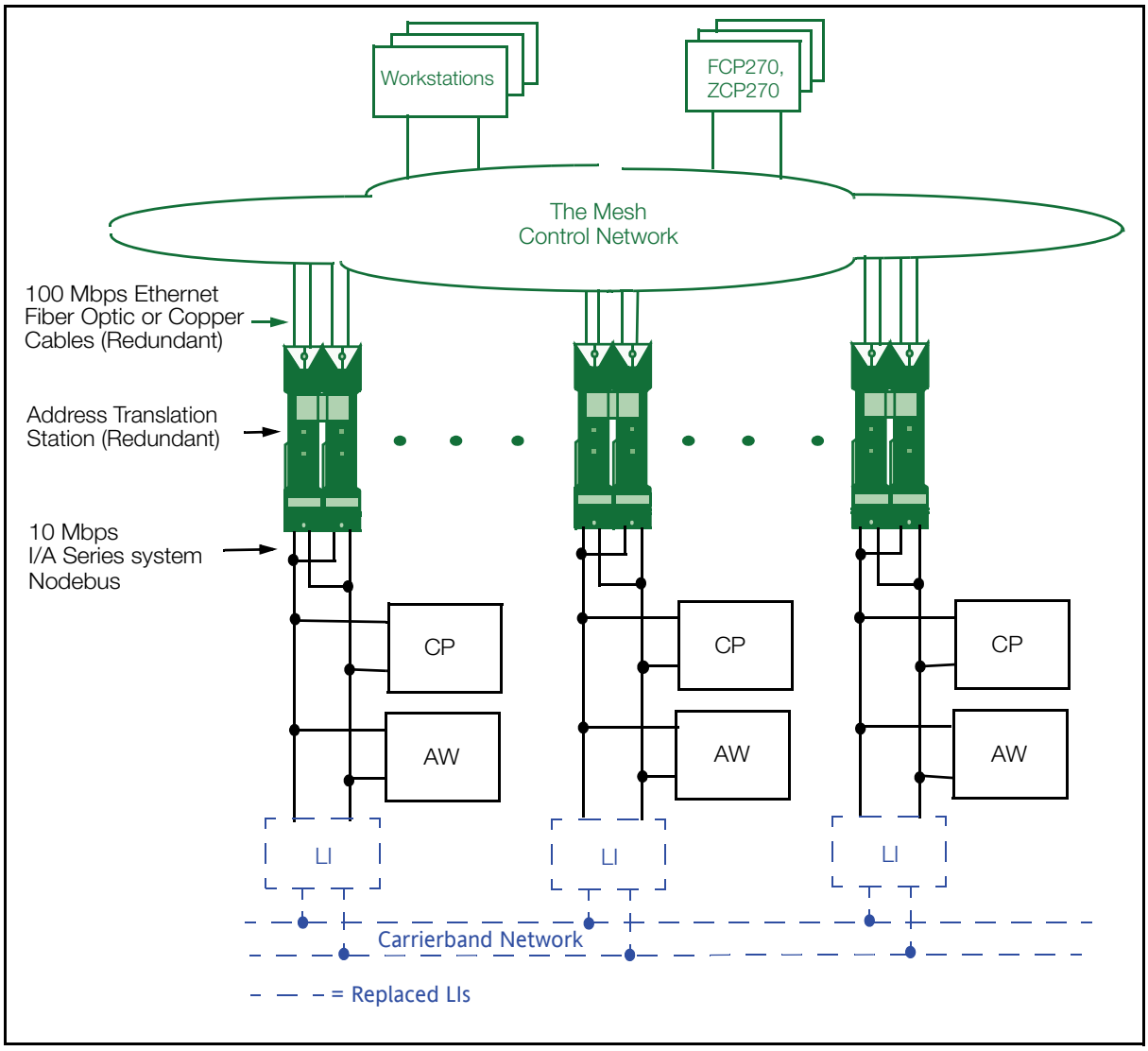

Figure 4. Nodebus Migration to The Mesh Control Network

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 MESH CONTROL NETWORK
Up to 1920 stations (Nodebus stations and The Mesh Control Network stations)

Time to Switch Redundant Modules

<1s

Minimal Mesh Control Network

Requires an ATS (optionally redundant), a Mesh based workstation to host the ATS and Mesh 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 I/A Series system Letterbug Configurator.
Letterbug or Hardware ID readout via the I/A Series system 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).

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

TEMPERATURE
0 to 60°C (32 to 140°F)

RELATIVE HUMIDITY
5 to 95% (Noncondensing)

ALTITUDE
-300 to +3,000 m (-1,000 to +10,000 ft)

Storage

TEMPERATURE
-40 to +70°C (-40 to +158°F)

RELATIVE HUMIDITY
5 to 95% (Noncondensing)

ALTITUDE
-300 to +12,000 m (-1,000 to +40,000 ft)

Vibration

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.

Mass (Maximum)

1.7 kg (3.75 lb) for a single, non-redundant module.

Mounting

May be placed in any of the following 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
228 mm (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.

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MB 21A Printed in U.S.A. 0807