Foxboro NCNI P0972PP

01 A physical-network bridge

Connection role

The NCNI joins the I/A Series Nodebus environment to the redundant control network. Stations continue communicating across that boundary using their standard network software. The interface provides the electrical and media attachment rather than introducing a new process-I/O conversion function.

Communication route

01	The source station transmits on its 10 Mbps Nodebus.
02	The Cellbus-connected NCNI receives the Nodebus communication.
03	An internal Ethernet switching function and buffer support the network-side link.
04	The selected copper or optical connection reaches the control-network switch.

Functional boundaries

Station side
Nodebus remains the communication medium for the attached stations.

Mounting structure
Cellbus supplies both module power and Nodebus access.

Network side
The front connection uses an appropriate Ethernet switch port.

Redundancy
A second interface serves the other Nodebus path.

Transparent station communication

Neither side requires special gateway software for this connection. The physical network boundary therefore should not be confused with an application protocol gateway that needs a separately installed translation package.

Do not substitute an I/O module

The NCNI carries network communication. Field-channel measurement ranges, output drive ratings and sensor wiring remain properties of the process-I/O equipment elsewhere in the installation.

Foxboro NCNI P0972PP

02 Optical and copper interface behavior

Optical connection

Optical characteristic	Value
Optical Ethernet standard	100BASE-FX
Optical link rate	100 Mbps, fixed
Optical duplex	Full duplex, fixed
Optical connector	MT-RJ
Optical fiber	62.5/125 µm multimode
Maximum optical path	2 km

Copper connection

Copper characteristic	Value
Copper Ethernet interface	10/100 Mbps, auto-negotiating
Copper duplex	Half/full duplex, auto-negotiating
Copper cable	CAT5 shielded twisted pair
Maximum copper path	100 m

Negotiated and fixed operation

The copper link can select 10 or 100 Mbps and half or full duplex through automatic negotiation. The optical link has a fixed 100 Mbps full-duplex operating mode. These are different link behaviors even though both provide a network attachment for the same interface module.

Fiber construction matters

The optical specification identifies both the MT-RJ termination and 62.5/125 µm multimode fiber. A connector that appears mechanically suitable does not establish the correct fiber construction or switch-interface match.

Distance follows the medium

The copper boundary is 100 m, while the specified optical path reaches 2 km. Use the relevant complete path length when choosing the medium and locating the switch; do not apply the optical allowance to a shielded twisted-pair run.

Foxboro NCNI P0972PP

03 Redundancy and rate adaptation

Network architecture

Architecture item	Characteristic
Nodebus rate	10 Mbps
Redundant Nodebus attachment	Two NCNI modules
First interface assignment	Bus A
Second interface assignment	Bus B
Rate adaptation	Internal Ethernet switch function with local buffering
Module/network indications	Front-panel module status and link status

A pair has separate bus responsibilities

The redundant attachment is built from two single-width interfaces. Each module is associated with one Nodebus rather than being described as a second processor executing a parallel process-control application.

Distinct network concepts

Link speed
The rate belongs to a particular interface or segment.

Duplex
Copper negotiation and fixed optical operation use different mode-selection behavior.

Buffering
Local storage supports transfer between the Nodebus and network link.

Path redundancy
Separate A and B attachments provide the two bus connections.

Avoid aggregate-rate assumptions

Connecting Nodebus to a faster control-network infrastructure does not change the Nodebus transmission rate. Evaluate the rate on each side of the NCNI independently instead of assigning the backbone rate to every attached station.

Physical separation remains visible

Identify the module, bus assignment, cable and switch port together. That association makes a single-path fault distinguishable from a station or wider control-network problem.

Foxboro NCNI P0972PP

04 Power and environmental ratings

Electrical limits

Electrical characteristic	Value
Supply voltage range	26–42 V DC
Typical supply voltage	39 V DC
Maximum power consumption	8 W per module
Maximum heat dissipation	8 W per module

Operating and storage conditions

Environmental characteristic	Value
Operating temperature	0 to +60 °C
Operating relative humidity	5–95%, noncondensing
Operating altitude	-300 to +3000 m
Storage temperature	-40 to +70 °C
Storage relative humidity	5–95%, noncondensing
Storage altitude	-300 to +12000 m

Calculated pair allowance

Two modules give a maximum subtotal of 16 W consumption and 16 W heat. At the typical 39 V input, 8 W corresponds to an estimated 0.205 A per module.

Calculated current is a planning estimate

The current figure is arithmetic at the typical supply voltage and stated maximum power. It is not a separate current-limit or startup specification. The mounting structure and complete installed supply arrangement remain part of the electrical assessment.

Condensation is a separate condition

A humidity reading inside the numerical range does not waive the noncondensing requirement. Check the enclosure conditions during temperature changes as well as during stable operation.

Foxboro NCNI P0972PP

05 Installation characteristics and service scope

Mechanical and connection arrangement

Characteristic	Arrangement
Form factor	Single-width Z-Module
Slot accommodation	Any I/A Series mounting-structure slot
Back connection	Cellbus for power and Nodebus
Front connection	Selected copper or optical Ethernet path
Redundant arrangement	Two interfaces with separate A and B assignments

What the indicators establish

Module-status and link-status indications concern different conditions. Read them together with the connected switch and the intended station communication. This avoids treating a physical link alone as proof that the application has its required end-to-end communication.

Service follows the affected boundary

A supply problem belongs first to the mounting and Cellbus side; an optical-link problem belongs to the fiber route and matching ports; a copper-mode discrepancy belongs to the negotiated Ethernet connection. Establish the failed boundary before replacing unrelated equipment.

Explore other Foxboro catalogue pages

Foxboro CP60 P0961FR

Foxboro P0972VA

Technical basis

Foxboro PSS 21H-7B5 B4, Nodebus/Control Network Interface, January 2003.