AUTOCALL

*UL, ULC Approved**

Fire Alarm Network Reference

Network Interconnections, Physical Bridge Modules

Features

Provides additional Autocall Fire Alarm Network connection flexibility using modem communications:

- Network topologies include ring (loop), star (hub), and combinations
- Connections can include linking of two Network loops into one network
- Total Network/System linking can include passing communications through up to three (3) physical bridge links

Available for Simplex 4100ES, 4100U, and 4010ES Series fire alarm control panels:

- Standard Physical Bridge modules include wired media modules for Network connections and a modem media module for bridge connections
- Models are available for Class B or Class X communications
- Fiber optic media modules can be field installed as required for Network communications
- Also compatible with legacy 4100 Series control panels

UL Listed to Standard 864

Description

Network Connection Flexibility. Physical bridge modules provide an intelligent network link that increases the flexibility of Autocall fire alarm Networks. Communications between the physical bridge modules use a proprietary, full duplex, two-wire modem protocol for efficient information transfer. Additionally, each physical bridge module functions as a "proxy" for its remote node information to maintain overall network performance.

Multiple Network Loop Connections. Connection options include linking of two network loops into one network, branching to single or multiple remote nodes using existing two-wire connections, creating hub nodes to form Star configuration systems, and combinations of these connections, providing convenient networking flexibility.

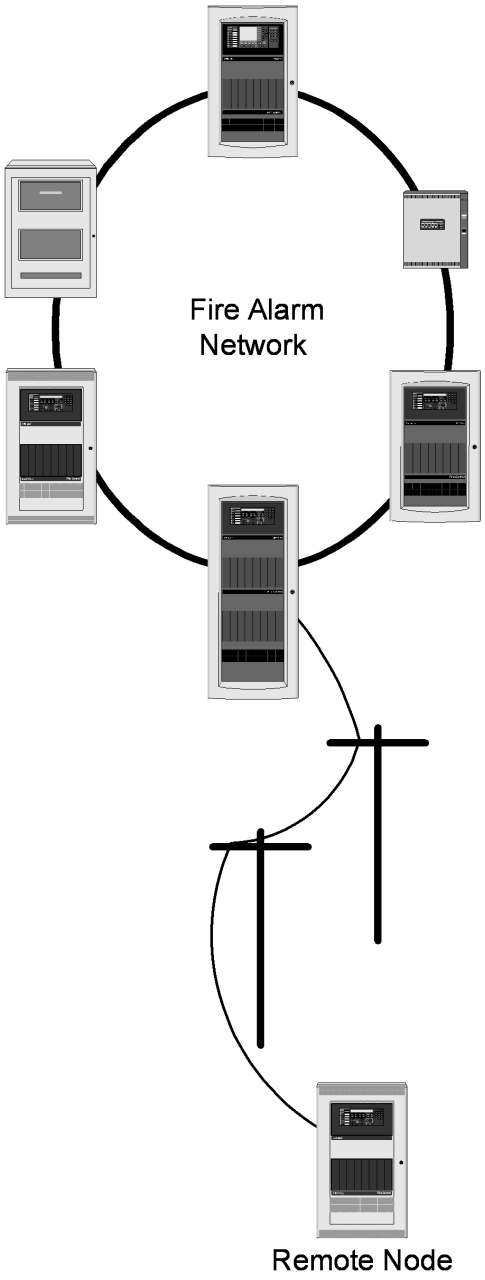

Figure 1: Physical Bridge Module Link Connected to a Single Remote Node

* Additional listings may be applicable; contact your local product supplier for the latest status.

Product Selection

Table 1: Modules for 4100ES

SKU	Description	Additional Details	Mounting Space Requirements
A100-6101	Physical Bridge Class B (Style 4) Module	Includes one modem module and 2 wired communications modules	Single slot size
A100-6102	Physical Bridge Class X (Style 7) Module	Includes two modem modules and 2 wired communications modules	Two slot size
A100-6057	Fiber optic media module	Order separately as needed to replace wired media modules on-site per system requirements	Mounts to Modular Network Interface Card
A100-6301	Left port, single-mode 4120 duplex fiber media card	Order separately as needed to replace wired media modules on-site per system requirements	Mounts on A100-6078 or A100-6061 modular network interface card. Maximum of 1 left port and 1 right port duplex fiber media card per modular network interface card. Field connections require left port to right port pairing. Order fiber media service kits for retrofit jobs where ST connectors are already installed (refer to data sheet *AC4100-0056* for full fiber media module specifications and retrofit information)
A100-6302	Right port, single-mode 4120 duplex fiber media card		
A100-6303	Left port, multi-mode 4120 duplex fiber media card		
A100-6304	Left port, multi-mode 4120 duplex fiber media card		
A100-0156	8 VDC Converter Module	Required for multiple Physical Bridge Modules, 3 A maximum	Single block module (4 x 5 card) for 4100ES or 4100U only (not applicable to 4010ES)

Table 2: Modules for 4010ES*

SKU	Description	Additional Details	Mounting Space Requirements
A100-6301	Left port, single-mode 4120 duplex fiber media card	Order separately as needed to replace wired media modules on-site per system requirements	Mounts on A100-6078 or A100-6061 modular network interface card. Maximum of 1 left port and 1 right port duplex fiber media card per modular network interface card. Field connections require left port to right port pairing. Order fiber media service kits for retrofit jobs where ST connectors are already installed (refer to data sheet *AC4100-0056* for full fiber media module specifications and retrofit information)
A100-6302	Right port, single-mode 4120 duplex fiber media card		
A100-6303	Left port, multi-mode 4120 duplex fiber media card		
A100-6304	Left port, multi-mode 4120 duplex fiber media card		

* Refer to data sheet AC4010-0004 for additional mounting details. (For international applications; refer to data sheet *AC4010-0006* .)

Hub Node Connection to Star Topology

Figure 2: Distibuted Remote Node Locations

Ring to Star Connections. Figure 2 illustrates the use of multiple physical bridge modules to allow a conventional ring topology Network to interface into a Star topology. Each physical bridge link requires a physical bridge module at each end. A network interface module is required at each node to complete the network communications path (refer to internal block diagrams Figure 3 and Figure 4 for additional information).

Retrofit Capability. This example illustrates the flexibility available when retrofitting existing Star connection topology system wiring.

Additional Applications

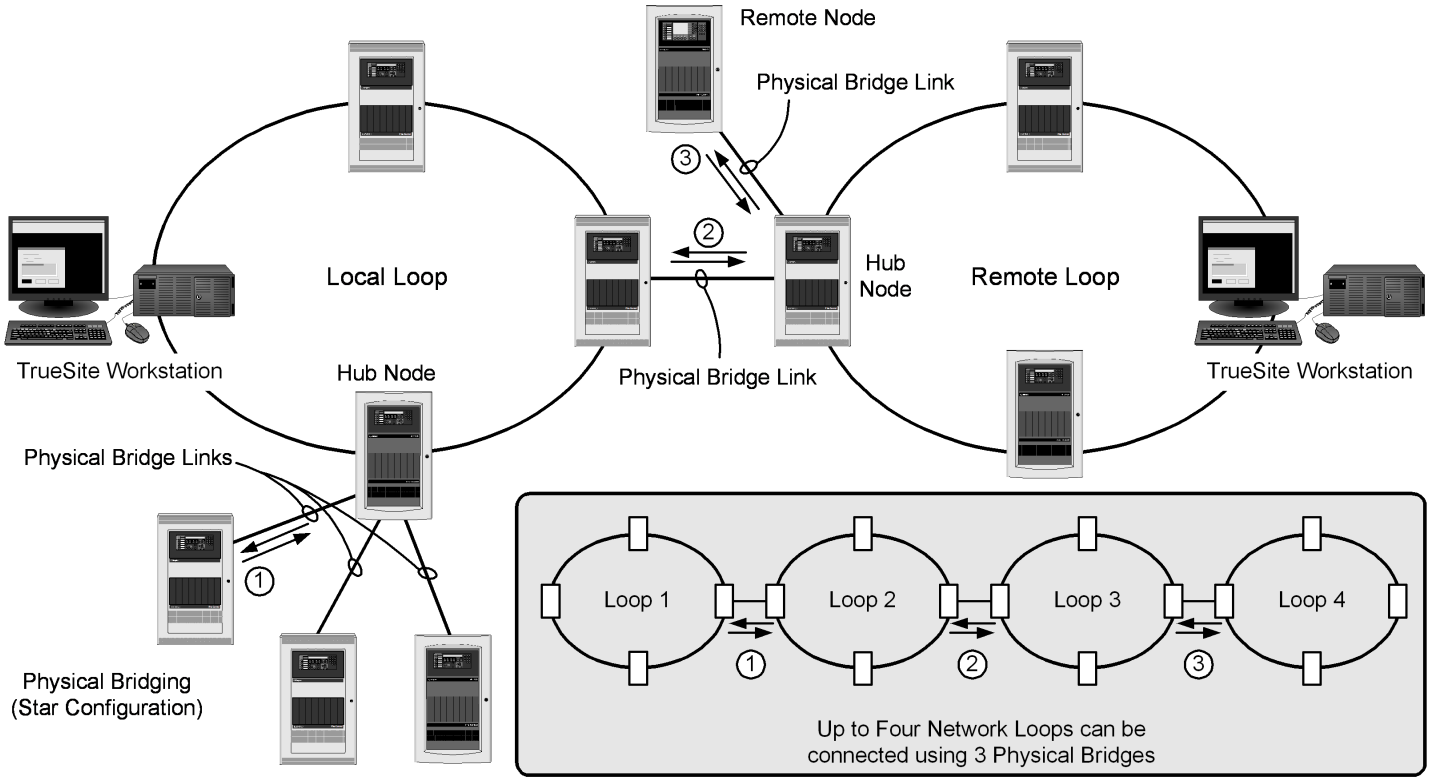

Figure 3: Physical bridges

Figure 3 illustrates Network connection flexibility using Physical Bridges. Network nodes can communicate through up to three (3) physical bridge connections as indicated by the arrows. Star topology bridges each link once back to the hub node and then communicate using standard Network wired connections.

In the shaded section below, with three (3) Physical Bridge links, up to four (4) separate Network loops can be connected (without Star connections).

Basic Physical Bridge Block Diagram

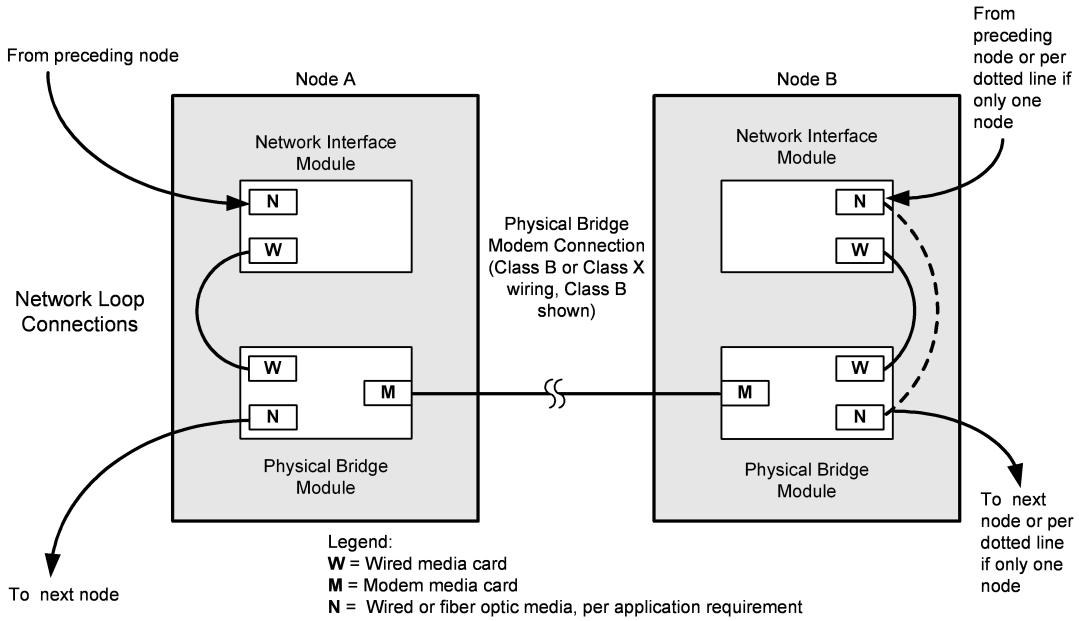

Figure 4: Physical Bridge Diagram

Specifications (for additional information refer to Installation Instructions 579-184AC)

Table 3: "Short Haul" Twisted Pair Lines

Specification	Rating
Maximum Distance	26 AWG = 9500 ft (2.85 km)
	24 AWG = 15,000 ft (4.5 km)

Table 4: "Long Haul" Leased Telco Lines

Specification	Rating
Maximum Distance	Essentially Unlimited
Characteristics	Private leased lines for analog data, point-to-point, full duplex, no line conditioning or signaling required, two wire line interface

Table 5: Connections and Data Information

Class B (Style 4) Connection	One, 2-wire RJ-11 Interface
Class X (Style 7) Connection	Two, 2-wire RJ-11 Interfaces
Data Rate	Up to 14.4 kbps
Throughput	Up to 38.4 kbps using MNP-5 compression and error correction

Table 6: Current Requirements and Environmental

Specifications	Ratings
With A100-6057 Fiber Optic Media	Each media module in use reduces above currents by 30 mA
Operating Temperature	32 °F to 120 °F (0 °C to 49 °C)
Operating Humidity	Up to 93% RH, non-condensing @ 90 °F (32 °C) maximum

Physical Bridge Hub Node to Multiple Star Connections Block Diagram

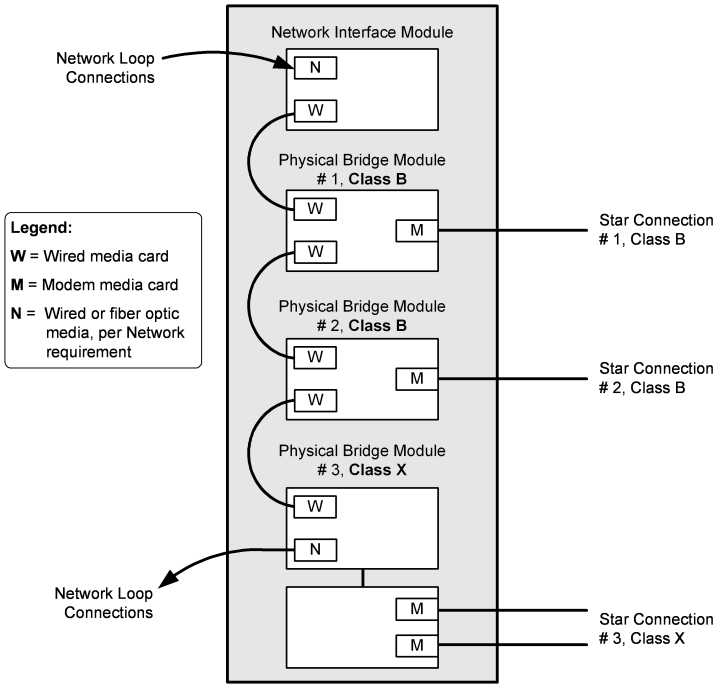

Figure 5: Connections Block Diagram