FOXBORO®

PSS 21H-7F8 B4

I/A Series® Hardware
Passive Star

4x4 Passive Star

8x8 Passive Star

The passive star is a passive signal distribution component designed for use in fiber optic IEEE 802.4 compatible networks. It does not amplify or regenerate communications, and thus does not require maintenance as an active (powered) device.

Passive stars are available in two models: the 4x4 passive star and the 8x8 passive star. The 4x4 passive star has four ports, and can distribute signals between active devices(1) with a communication distance of 4 km (2.48 mi) or less between them. The 8x8 passive star has eight ports, and can distribute signals between active devices with a communication distance of 1 km (0.62 mi) or less between them.

Each port on a passive star uses two ST-type connectors, one to receive and one to transmit signals. The passive star mounts in a standard 19-inch EIA rack or in an optionally available enclosure.

Since the fiber optic network is redundant, passive stars must be used in a redundant configuration.

The passive star must only be connected to active devices, such as the active concentrator. If it is connected to a passive device, such as a splitter/combiner, the resulting signal loss will exceed the maximum limit allowed in a fiber optic LAN.

(1) Active devices in a fiber optic LAN include Fiber Optic Carrierband LAN Interfaces, active concentrators, and Fiber Optic LAN Converters.

NETWORK CONFIGURATIONS

Passive stars can be used at the top of a fiber optic network hierarchy to directly interconnect active devices(1), or in conjunction with redundant active concentrators to reduce the number of connections to these concentrators. A network can incorporate passive stars performing both of these functions.

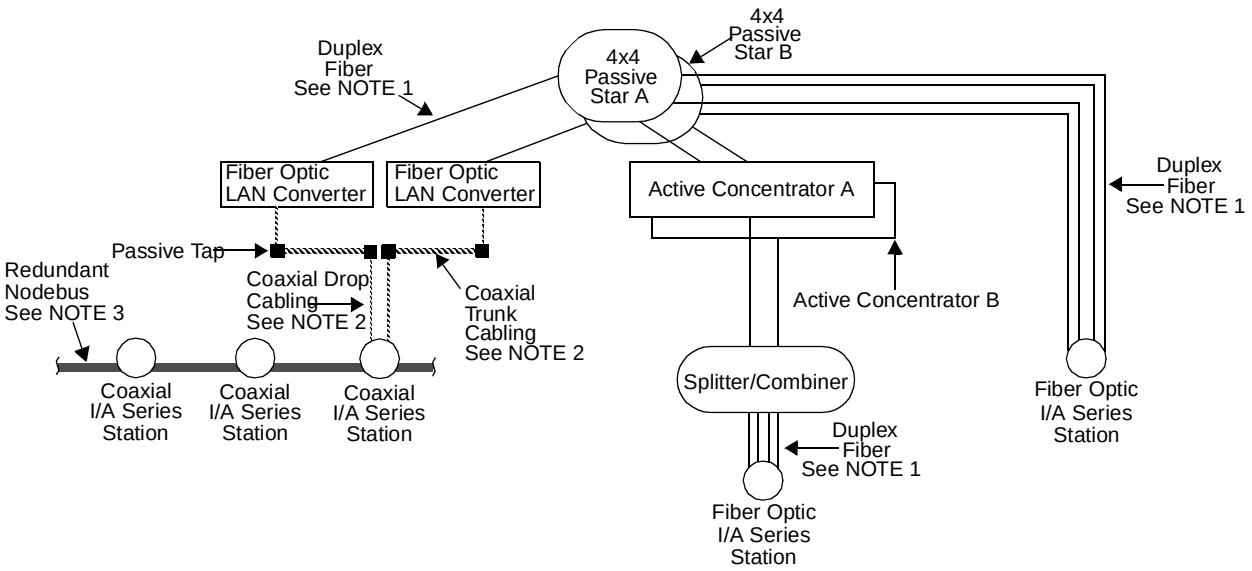
Figure 1 shows a redundant four-port passive star, distributing communications at the top of the network hierarchy(2).

Redundant passive stars can directly interconnect up to four I/A Series stations with fault-tolerant Fiber Optic Carrierband LAN Interfaces, or eight I/A Series stations with non-fault-tolerant Interfaces, (depending on the type of star), from this position in the network. Port usage for each of the passive stars in a redundant pair is as follows: each Fiber Optic LAN Converter, Fiber Optic Carrierband LAN Interface, and active concentrator uses a single port on each star, and each pair of fault-tolerant Fiber Optic Carrierband LAN Interfaces use two ports on each star.

If the number of connections and/or distances required to interconnect these devices is too great for the redundant passive star to handle, a redundant active concentrator(3) must be used in its place.

Figure 2 shows redundant 4x4 and 8x8 passive stars used in conjunction with a redundant active concentrator. In this configuration, passive stars reduce the number of connections required to connect multiple fiber optic I/A Series stations (nodes) with fault-tolerant Interfaces and Fiber Optic LAN Converters to the redundant concentrator.

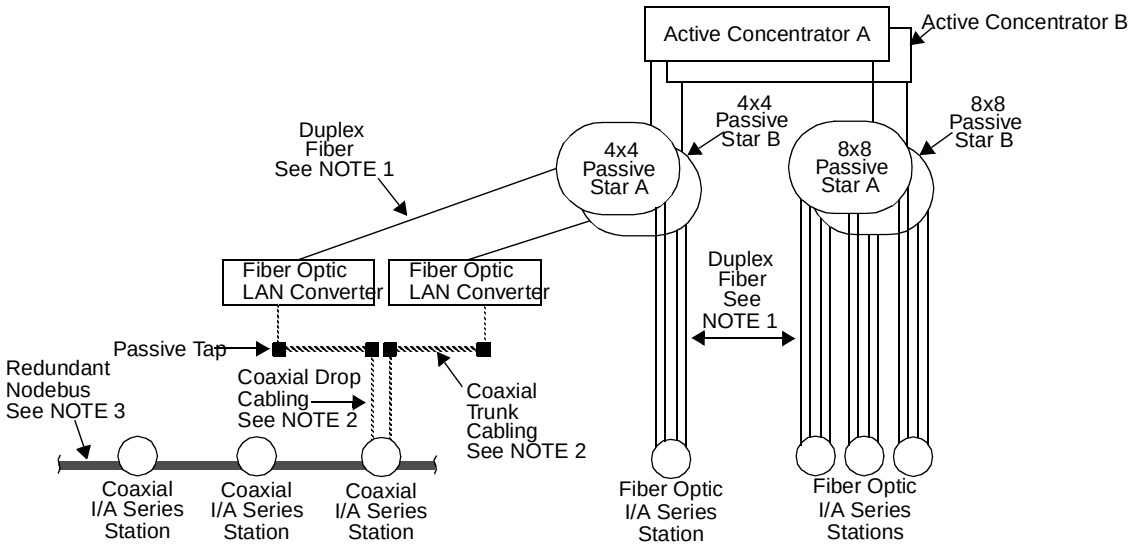
A redundant eight-port passive star in this configuration can interconnect up to three I/A Series stations with fault-tolerant Interfaces, or seven I/A Series stations with non-fault-tolerant Interfaces (depending on the type of star) to one port on the redundant active concentrator. Redundant passive stars must reserve one of their ports to connect to the redundant concentrator.



NOTE 1: Each unbroken line represents two fiber optic cables (one duplex cable).
NOTE 2: Each striped line represents a coaxial cable.
NOTE 3: The Nodebus can consist of either coaxial or fiber optic cable.

Figure 1. Typical Combined Coaxial and Fiber Optic LAN using Passive Stars at the Top of the Network

(1) Active devices in a fiber optic LAN include Fiber Optic Carrierband LAN Interfaces, active concentrators, and Fiber Optic LAN Converters.
(2) Although fiber optic I/A Series stations with fault-tolerant Interfaces are shown, fiber optic I/A Series stations with non-fault-tolerant Interfaces can be used as an alternative. In this configuration, two stations with non-fault-tolerant Interfaces can be used in place of every station with fault-tolerant Interfaces.
(3) For information pertaining to the active concentrator, refer to the Active Concentrator document- PSS 21H-7F6 B4.



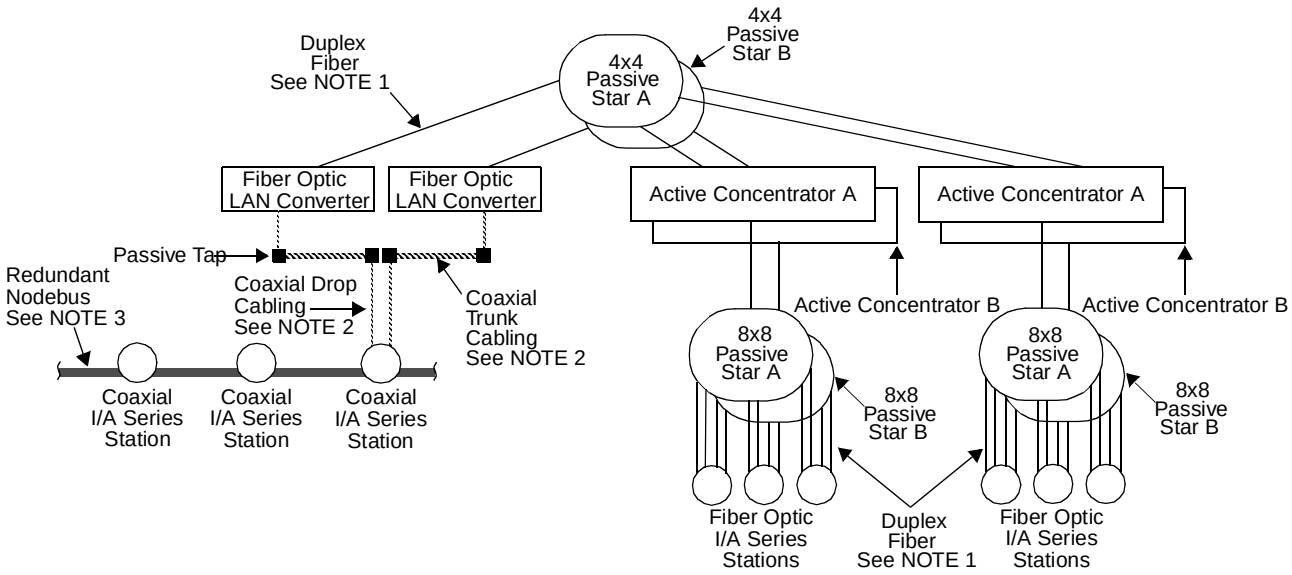
NOTE 1: Each unbroken line represents two fiber optic cables (one duplex cable).
NOTE 2: Each striped line represents a coaxial cable.
NOTE 3: The Nodebus can consist of either coaxial or fiber optic cable.

Figure 2. Typical Combined Coaxial and Fiber Optic LAN using Active Concentrators at the Top of the Network

Figure 3 demonstrates that redundant passive stars can be used at the top of the network hierarchy, and in conjunction with redundant active concentrators in the same network(1).

All devices connected to any passive star must be located within the range of the star.

The maximum communication distance between each I/A Series station (node) must remain 20 km (12.4 mi) or less for the network to properly distribute signals, and each fiber optic cable run must not exceed 10 km (6.2 mi) in length.



NOTE 1: Each unbroken line represents two fiber optic cables (one duplex cable).
NOTE 2: Each striped line represents a coaxial cable.
NOTE 3: The Nodebus can consist of either coaxial or fiber optic cable.

Figure 3. Typical Combined Coaxial and Fiber Optic LAN using Passive Stars and Active Concentrators

(1) Although fiber optic I/A Series stations with fault-tolerant Interfaces are shown, fiber optic I/A Series stations with non-fault-tolerant Interfaces can be used as an alternative. In this configuration, two stations with non-fault-tolerant Interfaces can be used in place of every station with fault-tolerant Interfaces.

ENVIRONMENTAL SPECIFICATIONS

Passive Star
TEMPERATURE
Operating
-40 to 85°C (-40 to 185°F)
Storage
–40 to 85°C (–40 to 185°F)
RELATIVE HUMIDITY
5 to 95% (noncondensing) at 30°C (86°F)

PHYSICAL SPECIFICATIONS

Fiber Type
Multimode graded-index glass fiber: 62.5 micron core, 125 micron cladding

Passive Star
FIBER OPTIC CONNECTORS
ST type (2 per port)
MASS (for both 4x4 and 8x8)
1.8 kg (3.9 lbs)

PHYSICAL SPECIFICATIONS (DISTANCE LIMITATIONS AND OPTICAL LOSSES)

Number of Ports	Optical Loss[a] (per channel-includes two mated connector pairs)	Maximum Distance allowed between each Active Device[b] connecting to a Passive Star
4	10 dB	4 km (2.48 miles)
8	13.5 dB	1 km (0.62 miles)

(a) The maximum optical loss allowable to any signal traveling between two active devices is 17 dB.

(b) Active devices in a fiber optic LAN include Fiber Optic Carrierband LAN Interfaces, active concentrators, and Fiber Optic LAN Converters.

DIMENSIONS-NOMINAL

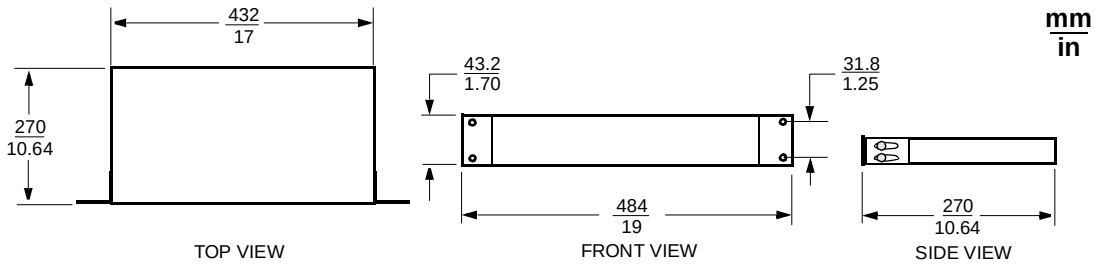


Figure 4. Passive Star Dimensions (Same for 4x4 and 8x8 Stars)

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