Quick Start Guide

Matrix Switchers – Linking Enclosures

Overview

AMX Matrix Switchers are available in numerous models and configurations. Therefore, the illustrations in this guide have been simplified to focus on linking and to represent two types of switchers (based on type of link port). For specific product details, see the *AMX AutoPatch CD* or visit **www.amx.com**.

Linking enclosures in a multiple-enclosure system allows control information to pass between them with the Ethernet ports (RJ-45 or BNC) providing consistent control speed. In a multiple-enclosure system, the enclosure with the control panel or with an external controller attached receives control information and passes on relevant information to the other enclosures via the links.

Caution: *Switching systems should only be linked in their own isolated networks.*

Note: *If any of the linked enclosures were not part of the original system, contact technical support for important information not included here.*

Enclosures and Ethernet Ports

The method used for linking depends on the type of Ethernet port on each enclosure's CPU. The table below indicates the type of Ethernet ports available for each of the AMX product lines that have enclosure-to-enclosure linking functionality.

Enclosures and Ethernet Ports

Enclosure	Ethernet 10Base-T (RJ-45)	Ethernet 10Base-2 (BNC)
Epica-128 Epica-256		X X
Epica DG* Epica DGX 16 Epica DGX 32 Epica DGX 144*	X X X X	
Modula Modula CatPro		X X
Optima Optima SD	X X	
Precis SD	X	

Important: *Enclosures must be cabled correctly after linking. Check the "Connector Guide" and the ENC (enclosure) number, located on the rear of each enclosure to make sure that you are attaching the correct signal cables to the correct enclosures.*

*The Epica DG and Epica DGX 144 can each link to any of the other enclosures listed. They have not been fully tested for Epica DG to Epica DG linking and Epica DGX 144 to Epica DGX 144 linking or for linking to each other.

Cables and Equipment

AMX provides link cables and equipment from the list below for enclosures ordered as part of a linked system.

- RG-58 Cable – coax cable used for linking from a BNC port (Ethernet 10Base-2) on one enclosure to the BNC port on another enclosure; coax cable is also used to connect an enclosure to a Media Converter if required
- Media Converter – RJ-45 port (Ethernet 10Base-T) to BNC port (10Base-2)
- RJ-45 Straight-Through Patch Cable – wired to TIA/EIA-568-A on both cable ends
- RJ-45 Crossover Cable – wired to TIA/EIA-568-A on one cable end and TIA/EIA-568-B on the other end
- Multi-Port Switch (Hub) – with multiple RJ-45 (10/100) ports

Cables and Distances

Network Segment	Cable Type	Maximum Distance
RJ-45 to RJ-45	RJ-45 (crossover)	100 ft. (30.5 m)
BNC to BNC**	RG-58	10 ft. (3.05 m)
BNC to Media Converter	RG-58	10 ft. (3.05 m)
RJ-45 to Media Converter	RJ-45 (straight-through patch)	100 ft. (30.5 m)

**The total distance between the two end termination connectors in a multiple-enclosure system with BNC Ethernet ports cannot exceed 10 ft. (3.05 m), including the distance to a Media Converter.

Note: *For information on the LEDs on the RJ-45 connector, see the bottom of the left-hand column on the next page.*

Note: *For Epica DGX 16/32 enclosures, either RJ-45 crossover cable (provided) or RJ-45 straight-through patch cable can be used because the ENC Link ports automatically adjust to either type of cable.*

Linking RJ-45 to RJ-45

Important: *If the enclosure has an RJ-45 connector labeled "TCP/IP," do not use it for linking enclosures. Also, do not use an RJ-45 enclosure linking connector for a TCP/IP or LAN connection.*

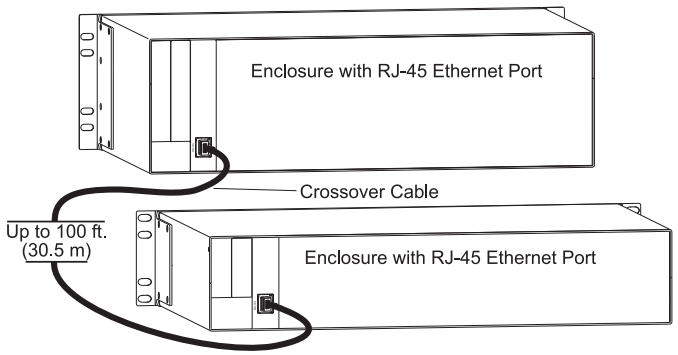

FIG. 1 Linking RJ-45 port to RJ-45 port

To link RJ-45 port to RJ-45 port:

1. Insert one end of the crossover cable into the RJ-45 Ethernet port on the first enclosure.
2. Insert the other end of the crossover cable into the RJ-45 Ethernet port on the second enclosure.

Linking RJ-45 to RJ-45 to RJ-45 . . .

Note: *If you have questions regarding cabling or network related issues in conjunction with using a multi-port switch (hub) for linking enclosures, contact your network administrator.*

Important: *If the enclosure has an RJ-45 connector labeled "TCP/IP," do not use it for linking enclosures. Also, do not use an RJ-45 enclosure linking connector for a TCP/IP or LAN connection.*

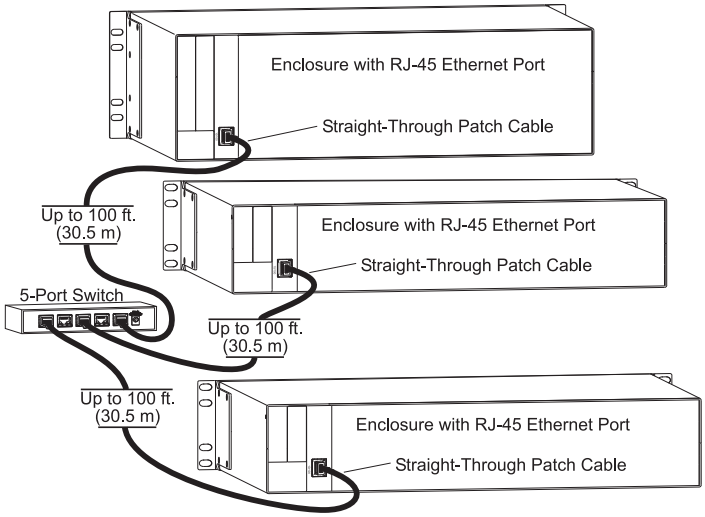

FIG. 2 Linking RJ-45 ports to a multi-port switch

To link multiple enclosures with RJ-45 ports using a multi-port switch:

1. Insert one end of the straight-through cable into the RJ-45 Ethernet port on the first enclosure.
2. Insert the other end of the straight-through cable into one of the RJ-45 Ethernet ports on the multi-port switch.
3. Repeat Steps 1 and 2 for the remaining enclosures.

Linking RJ-45 to BNC

Important: *If the enclosure has an RJ-45 connector labeled "TCP/IP," do not use it for linking enclosures. Also, do not use an RJ-45 enclosure linking connector for a TCP/IP or LAN connection.*

The distance between the RJ-45 Ethernet port on the enclosure and on the Media Converter cannot exceed 100 ft. (30.5 m).

The distance between the BNC Ethernet port on the enclosure and on the Media Converter cannot exceed 10 ft. (3.05 m).

If additional enclosures are daisy-chained off the enclosure with the BNC Ethernet port, the total distance of the coax cable run cannot exceed 10 ft. (3.05 m).

Additional enclosures with RJ-45 Ethernet ports can be included by using a multi-port switch (hub) per the previous set of instructions.

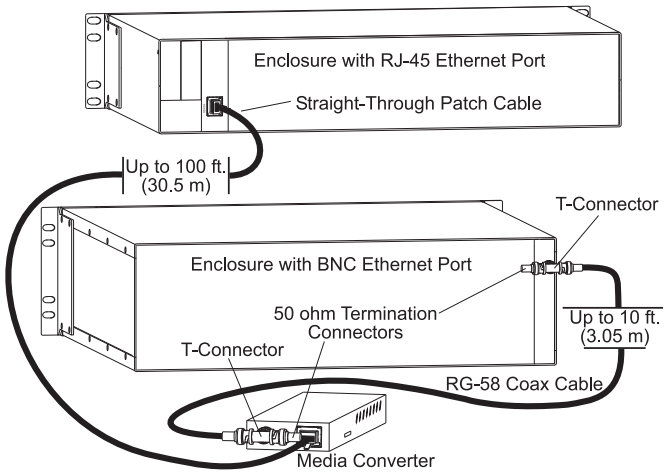

FIG. 3 Linking RJ-45 port to BNC port using a Media Converter

To link RJ-45 port to BNC port using a Media Converter:

1. Insert one end of the straight-through patch cable into the RJ-45 Ethernet port on the first enclosure.
2. Insert the other end of the straight-through patch cable into the RJ-45 port on the Media Converter.
3. Fasten a T-connector to the Ethernet BNC port on the second enclosure.
4. Attach a 50 ohm termination connector to one end of the T-connector.
5. Attach one end of the RG-58 coax cable to the other end of the T-connector.
6. Fasten a T-connector to the Media Converter.
7. Attach the open end of the RG-58 coax cable to the T-connector on the Media Converter.
8. Attach a 50 ohm termination connector to the open end of the T-connector on the Media Converter.

Important: *Attach 50 ohm termination connectors to the open ends of all of the T-connectors in the system.*

Ethernet Connector LEDs

The RJ-45 (10Base-T Ethernet) connector has two LEDs that indicate communication status when the enclosure is linked as part of an active system. Depending on the enclosure, the RJ-45 connector for linking may be labeled: "ENC LINK," "LINK," or "10/100."

Important: *If the enclosure has an RJ-45 connector labeled "TCP/IP," do not use it for linking enclosures. Also, do not use an RJ-45 enclosure linking connector as a TCP/IP or LAN connection.*

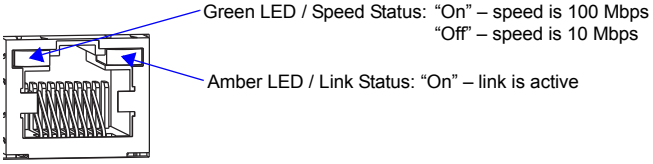

FIG. 4 Enclosure linking Ethernet connector LEDs indicate communication status

Important: *If an enclosure in a linked system is down (due to power failure, etc.), it may need to be disconnected from the remaining enclosures in order for the rest of the system to continue working.*

Linking BNC to BNC

The total distance between the two BNC Ethernet ports cannot exceed 10 ft. (3.05 m).

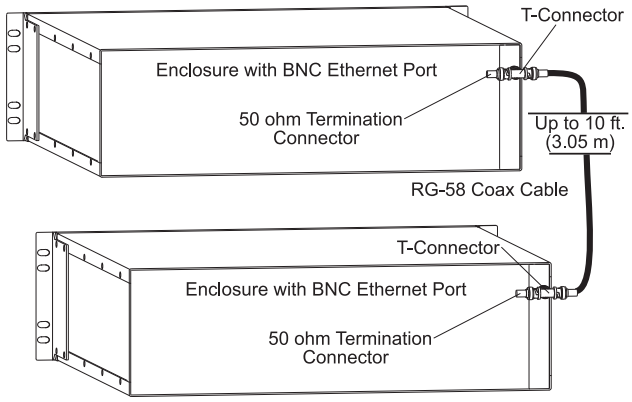

FIG. 5 Linking BNC port to BNC port

Important: *Attach 50 ohm termination connectors to the open ends of the T-connectors on both enclosures.*

To link BNC port to BNC port:

1. Fasten a T-connector to the BNC Ethernet port on the first enclosure.
2. Attach a 50 ohm termination connector to one end of the T-connector.
3. Attach one end of the RG-58 coax cable to the other end of the T-connector.
4. Fasten a T-connector to the BNC Ethernet port on the second enclosure.
5. Attach the open end of the RG-58 coax cable to one end of the T-connector on the second enclosure.
6. Attach a 50 ohm termination connector to the other end of the T-connector.

Linking BNC to BNC to BNC . . .

If the system has more than two enclosures with BNC ports, the enclosures can be daisy-chained per the previous set of instructions.
The total distance between the two end termination connectors in a multiple-enclosure system with BNC Ethernet ports cannot exceed 10 ft. (3.05 m).

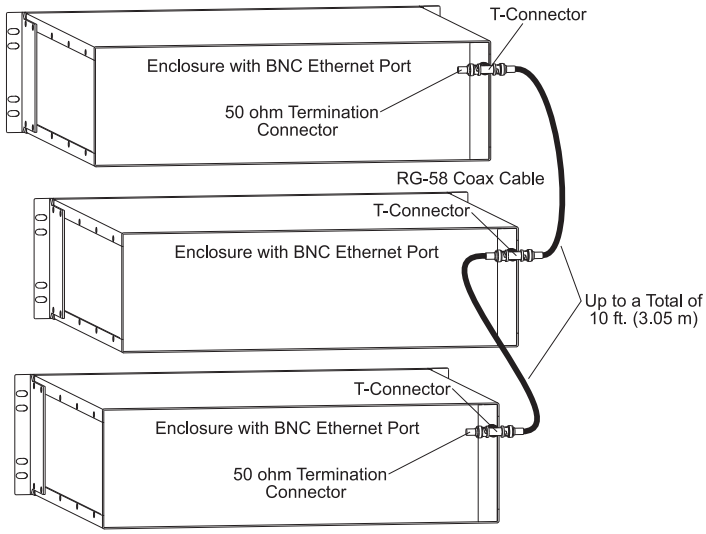

FIG. 6 Linking BNC ports in a daisy chain

Important: *Attach 50 ohm termination connectors to the open ends of the T-connectors on the first and last enclosures.*

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