



DSX-1 and DSX-1C Cross-Aisle Panel User Manual

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INTRODUCTION

This manual describes the ADC DSX-1 Cross-Aisle Panels and their use in multiple lineup DSX-1 Systems.

Revision History

ISSUE	DATE	REASON FOR CHANGE
Issue 1	04/1996	
Issue 2	09/1996	
Issue 3	08/1997	
Issue 4	01/2001	Non-technical update.

Trademark Information

ADC is a registered trademark of ADC Telecommunications, Inc.

Admonishments

Important safety admonishments are used throughout this manual to warn of possible hazards to persons or equipment. An admonishment identifies a possible hazard and then explains what may happen if the hazard is not avoided. The admonishments — in the form of Dangers, Warnings, and Cautions — must be followed at all times. These warnings are flagged by use of the triangular alert icon (seen below), and are listed in descending order of severity of injury or damage and likelihood of occurrence.



Danger: *Danger is used to indicate the presence of a hazard that **will** cause severe personal injury, death, or substantial property damage if the hazard is not avoided.*



Warning: *Warning is used to indicate the presence of a hazard that **can** cause severe personal injury, death, or substantial property damage if the hazard is not avoided.*



Caution: *Caution is used to indicate the presence of a hazard that **will** or **can** cause minor personal injury or property damage if the hazard is not avoided.*

1 GENERAL

This manual describes ADC's DSX-1 Cross-Aisle Panels and their application in multi-lineup DSX-1 Systems. This manual also provides complete instructions for installing the Cross-Aisle Panel in a bay. Procedures for mounting, cabling, and wiring the panels in the bay are included. The manual includes recommended inter-lineup wiring configurations and installation instructions. It is recommended that the entire manual be read and understood before beginning the actual installation.

2 DESCRIPTION

Cross-Aisle Panels are termination fields for tie cables between bay lineups. Use of these panels eliminates the need for individual overhead cross-connect wires from one lineup to another. Bay lineups are interconnected by means of tie cables terminated to Cross-Aisle Panels on each lineup. DSX circuits in separate lineups are then interconnected by installing cross-connect wires from each DSX circuit to the Cross-Aisle Panel in the same lineup.

A typical Cross-Aisle Panel is shown in [Figure 1](#). Cross-Aisle Panels are available in various dimensions with either 50, 100, or 200 five-wire terminations. Cross-Aisle Panels are also available in 50 or 100 six-wire terminations. Specifications for the Cross-Aisle Panels can be found in ADC catalog number 256, DSX-1 Modules and Panels.

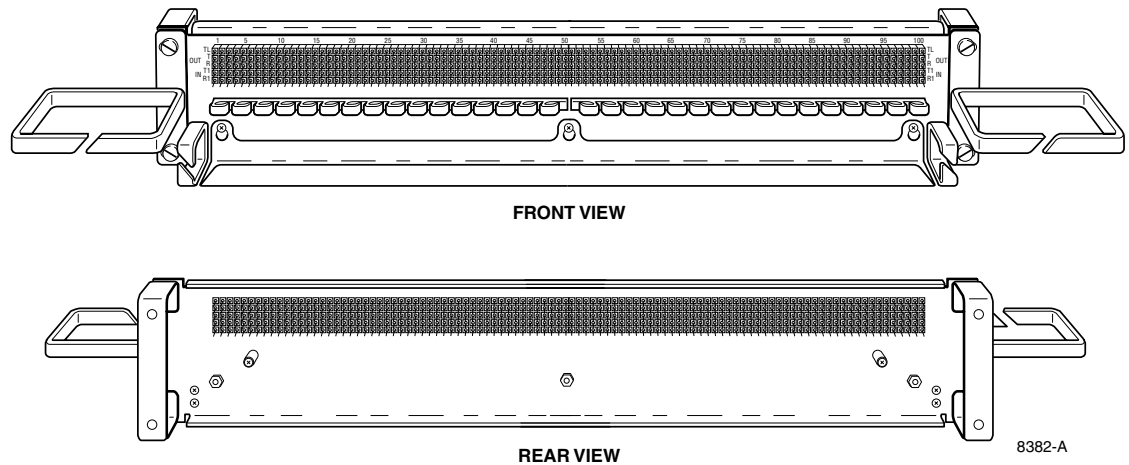


Figure 1. DSX-CAP BEST Cross-Aisle Panel

3 APPLICATION

Cross-Aisle Panels or space for these panels should be provided in every bay of a DSX multiple-lineup. All wiring is point-to-point with no multiples. ADC recommends one of the following Cross-Aisle Panel cable designs:

- Direct wiring between like numbered bays as shown in [Figure 2](#).
- Zoned wiring as shown in [Figure 3](#).

► **Note:** The circuit count and numbering system is an example only and may be changed depending on local practices. These examples show how a unique numbering system can be used no matter how circuits are provided.

3.1 Direct Cross-Aisle Wiring

In [Figure 2](#), all Cross-Aisle Panels are cabled between the same numbered bays in each lineup. In this direct wiring design cross-connect wires are run from the Cross-Aisle Panel in the bay where they originate to the associated Cross-Aisle Panel in the same numbered bay of another lineup. This means that no horizontal wireway is required in the originating bay. The cross-connect is then extended to the terminating location, in most cases using a horizontal wireway in the second lineup.

3.2 Zoned Cross-Aisle Wiring

In [Figure 3](#), Cross-Aisle Panels are cabled between the same bays as in [Figure 2](#), they are also cabled between like positioned bays in each zone. [Figure 3](#) shows Cross-Aisle Panel cable routing for a two-zone cross-aisle tie wiring arrangement. This figure shows how the first bays in each zone are interconnected (all bay 1s and bay 11s). The cabling between other bays is not shown but is done in the same manner (all bay 2s and bay 12s, all bay 3s and bay 13s, etc.).

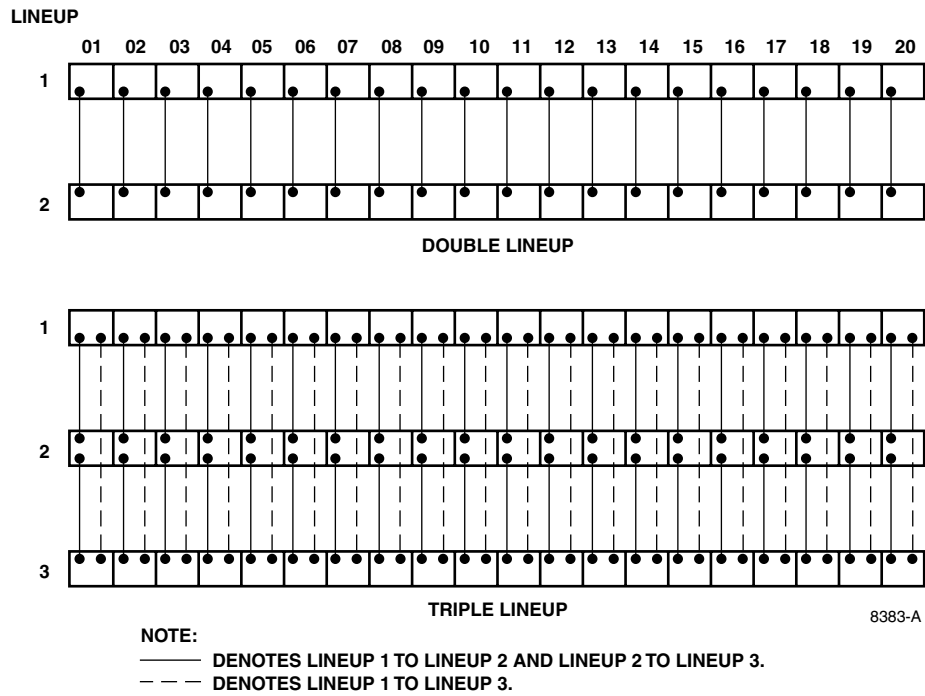


Figure 2. DSX-1/1C Cross-Aisle Panel Direct Wiring

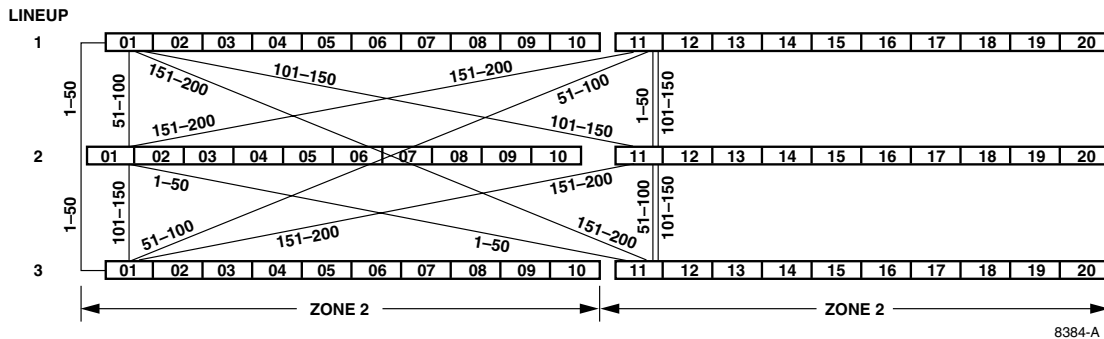


Figure 3. DSX-1/1C Cross-Aisle Panel Two Zone Wiring

Table 1 shows point-to-point information for interconnecting three lineups with 20 bays each. In this example 200 cross-aisle circuits are provided in each bay with 50 circuit complements distributed as shown in Figure 3.

Zoned cross-aisle tie cabling systems may contain as many zones as desired. However, each zone should have the same number of bays. This allows the cable complements to be equally distributed between each set of bays. With the zoned cross-aisle design, jumpers use Cross-Aisle Panels in the bay where they originate (no horizontal wireway necessary) to an associated Cross-Aisle Panel located in the other lineup nearest the terminating location. The cross-connect is then extended in that lineup to the terminating location using the horizontal wireway unless termination is in the same bay.

Table 1. Two Zone Cross-Aisle Panel Wiring

LINEUP/BAY		CIRCUIT COUNT	LINEUP/BAY		CIRCUIT COUNT
FROM	TO		FROM	TO	
1/01	2/01	51-100	1/06	2/06	51-100
1/01	2/11	101-150	1/06	2/16	101-150
1/01	3/01	1-50	1/06	3/06	1-50
1/01	3/11	151-200	1/06	3/16	151-200
2/01	1/11	151-200	2/06	1/16	151-200
2/01	3/01	101-150	2/06	3/06	101-150
2/01	3/11	1-50	2/06	3/16	1-50
3/01	1/11	51-100	3/06	1/16	51-100
3/01	2/11	151-200	3/06	2/16	151-200
1/02	2/02	51-100	1/07	2/07	51-100
1/02	2/12	101-150	1/07	2/17	101-150
1/02	3/02	1-50	1/07	3/07	1-50
1/02	3/12	151-200	1/07	3/17	151-200
2/02	1/12	151-200	2/07	1/17	151-200
2/02	3/02	101-150	2/07	3/07	101-150
2/02	3/12	1-50	2/07	3/17	1-50
3/02	1/12	51-100	3/07	1/17	51-100
3/02	2/12	151-200	3/07	2/17	151-200
1/03	2/03	51-100	1/08	2/08	51-100
1/03	2/13	101-150	1/08	2/18	101-150
1/03	3/03	1-50	1/08	3/08	1-50
1/03	3/13	151-200	1/08	3/18	151-200
2/03	1/13	151-200	2/08	1/18	151-200
2/03	3/03	101-150	2/08	3/08	101-150
2/03	3/13	1-50	2/08	3/18	1-50
3/03	1/13	51-100	3/08	1/18	51-100
3/03	2/13	151-200	3/08	2/18	151-200
1/04	2/04	51-100	1/09	2/09	51-100
1/04	2/14	101-150	1/09	2/19	101-150
1/04	3/04	1-50	1/09	3/09	1-50
1/04	3/14	151-200	1/09	3/19	151-200
2/04	1/14	151-200	2/09	1/19	151-200
2/04	3/04	101-150	2/09	3/09	101-150
2/04	3/14	1-50	2/09	3/19	1-50
3/04	1/14	51-100	3/09	1/19	51-100
3/04	2/14	151-200	3/09	2/19	151-200

(continued)

Table 1. Two Zone Cross-Aisle Panel Wiring, continued

LINEUP/BAY		CIRCUIT COUNT	LINEUP/BAY		CIRCUIT COUNT
FROM	TO		FROM	TO	
1/05	2/05	51-100	1/10	2/10	51-100
1/05	2/15	101-150	1/10	2/20	101-150
1/05	3/05	1-50	1/10	3/10	1-50
1/05	3/15	151-200	1/10	3/20	151-200
2/05	1/15	151-200	2/10	1/20	151-200
2/05	3/05	101-150	2/10	3/10	101-150
2/05	3/15	1-50	2/10	3/20	1-50
3/05	1/15	51-100	3/10	1/20	51-100
3/05	2/15	151-200	3/10	2/20	151-200
1/11	2/11	1-50	1/16	2/16	1-50
1/11	3/11	101-150	1/16	3/16	101-150
2/11	3/11	51-100	2/16	3/16	51-100
1/12	2/12	1-50	1/17	2/17	1-50
1/12	3/12	101-150	1/17	3/17	101-150
2/12	3/12	51-100	2/17	3/17	51-100
1/13	2/13	1-50	1/18	2/18	1-50
1/13	3/13	101-150	1/18	3/18	101-150
2/13	3/13	51-100	2/18	3/18	51-100
1/14	2/14	1-50	1/19	2/19	1-50
1/14	3/14	101-150	1/19	3/19	101-150
2/14	3/14	51-100	2/19	3/19	51-100
1/15	2/15	1-50	1/20	2/20	1-50
1/15	3/15	101-150	1/20	3/20	101-150
2/15	3/15	51-100	2/20	3/20	51-100

The zoned cross-aisle cabling system results in shorter jumpers and thereby reduces horizontal jumper pileup.

3.3 Ratio of Cross-Aisle Ties

The ratio of cross-aisle ties to the number of equipment terminations in a bay may vary greatly, depending on the design of the lineups. Cable considerations include:

- Quantity of DSX terminations in each bay. Typical seven foot DSX bays may have from 450 to 1008 terminations.
- Spread of equipment terminations within each bay. If multiplexers and digital switch terminations are located in the same bay, fewer cross-connect wires will leave that bay than if the multiplexers and switch terminations are located in different bays.
- Short cross-connect concept. Preferential assignment or software is used always to select the shortest possible cross-connect.

If assignments are made completely at random in a three-lineup system, it is possible that about two-thirds of the cross-connect wires will leave a lineup. If assignments are completely contained in a lineup, no cross-connect wires will leave that lineup. Most offices will be somewhere between these two extremes. It is recommended that a minimum ratio of 25% cross-aisle tie circuits to DSX termination be provided. It may be prudent to leave room for another cross-aisle panel to be installed at a later date as the lineups mature.

4 INSTALLATION

Installation of Cross-Aisle Panels involves mounting of the panels on the various bays and interconnecting them between the lineups.



Warning: *To prevent electrical shock, never install Cross-Aisle Panels in a wet location or during a lightning storm. When installing or modifying telephone lines, disconnect lines at the network interface before working with uninsulated lines or terminals.*

4.1 Panel Mounting

Install all Cross-Aisle Panels in the assigned bay locations using 12 – 24 × 1/2 inch mounting screws.

► **Note:** The 12 – 24 × 1/2 inch mounting screws must be ordered separately.

4.2 Installation Drawing

Each panel is shipped with an installation drawing. This drawing defines the specific input and output terminations on the Cross-Aisle Panel.

[Figure 4](#) shows a typical installation drawing. The Cross-Aisle Panel shown in [Figure 4](#) has 100 DSX circuits.

In a front cross-connect DSX system the front of the Cross-Aisle Panel is used to connect cross-connect jumpers. The back is used to connect tie cables from a Cross-Aisle Panel in one lineup to a Cross-Aisle Panel in another lineup.

In a rear cross-connect system, the back of the Cross-Aisle Panel is used to connect cross-connect jumpers. The front is used to connect tie cables from a Cross-Aisle Panel in one lineup to a Cross-Aisle Panel in another lineup.

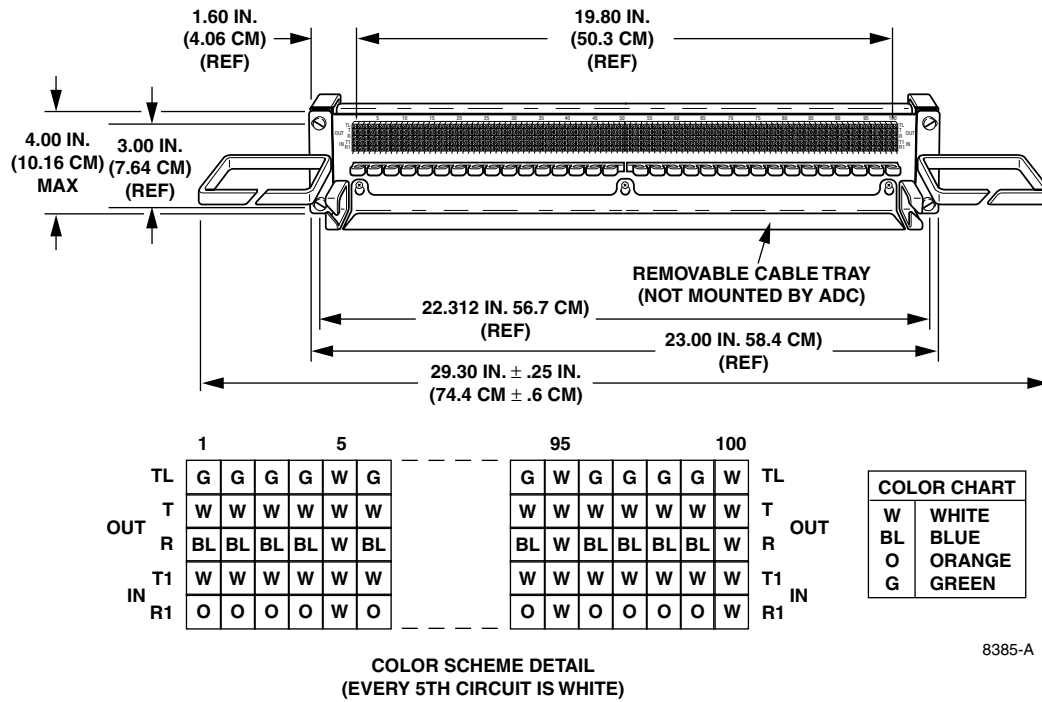


Figure 4. Typical Information Shown on Installation Drawing

4.3 Cross-Aisle Panel Cabling

4.3.1 Cross-Aisle Tie Cable Type

Recommended cable for cross-aisle cable ties is shielded twisted pair cable 26 AWG, similar to AT&T 1249 cable. Separate cable should be used for each direction of the circuit. Ground the cable shield at one end only.

4.3.2 Cross-Aisle Tie Cable Connections

Connect the tie cables to the wire-wrap terminals on the Cross-Aisle Panels. Figures 2 and 3 show Cross-Aisle Panel wiring in typical multi-lineup systems. One recommended method of wiring is to connect the OUT terminals in one lineup to the IN terminals of the other lineup as shown in Figure 5.

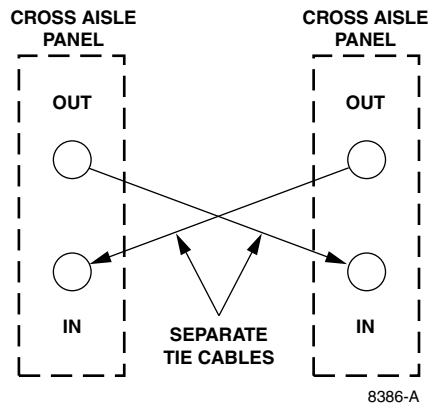


Figure 5. Typical Cross-Aisle Panel Cabling

4.4 Cross-Connects

4.4.1 Cross-Connect Wire Type

Recommended cross-connect cable should be 24 AWG conductor with independent twisted pairs and a binder wire all twisted together.

4.4.2 Cross-Connect Length

The DSX cross-connect wires add to the overall digital signal losses depending on the wire length. To assure reliable signal levels, the recommended maximum cross-connect length including cross-aisle cables is 85 feet as shown in Figure 6. Always cross-connect from OUT to IN and IN to OUT.

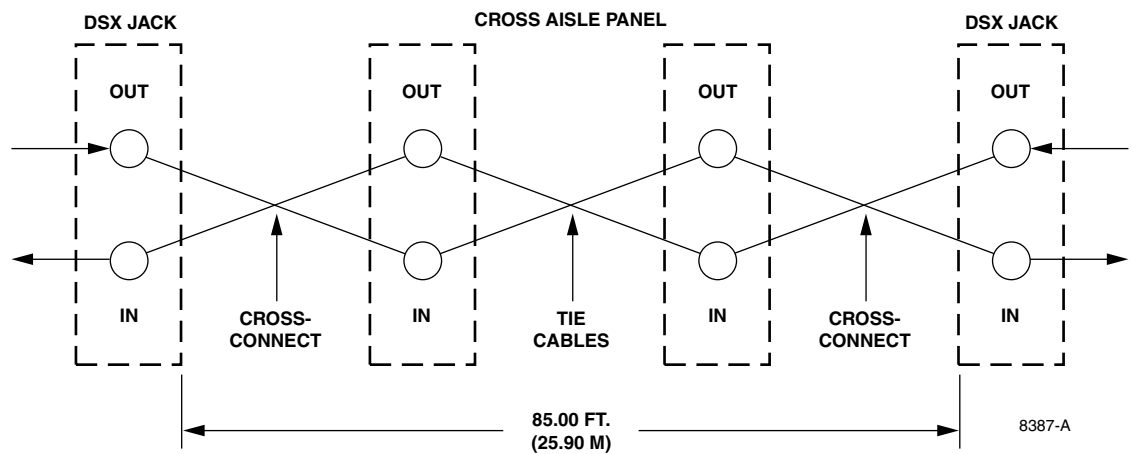
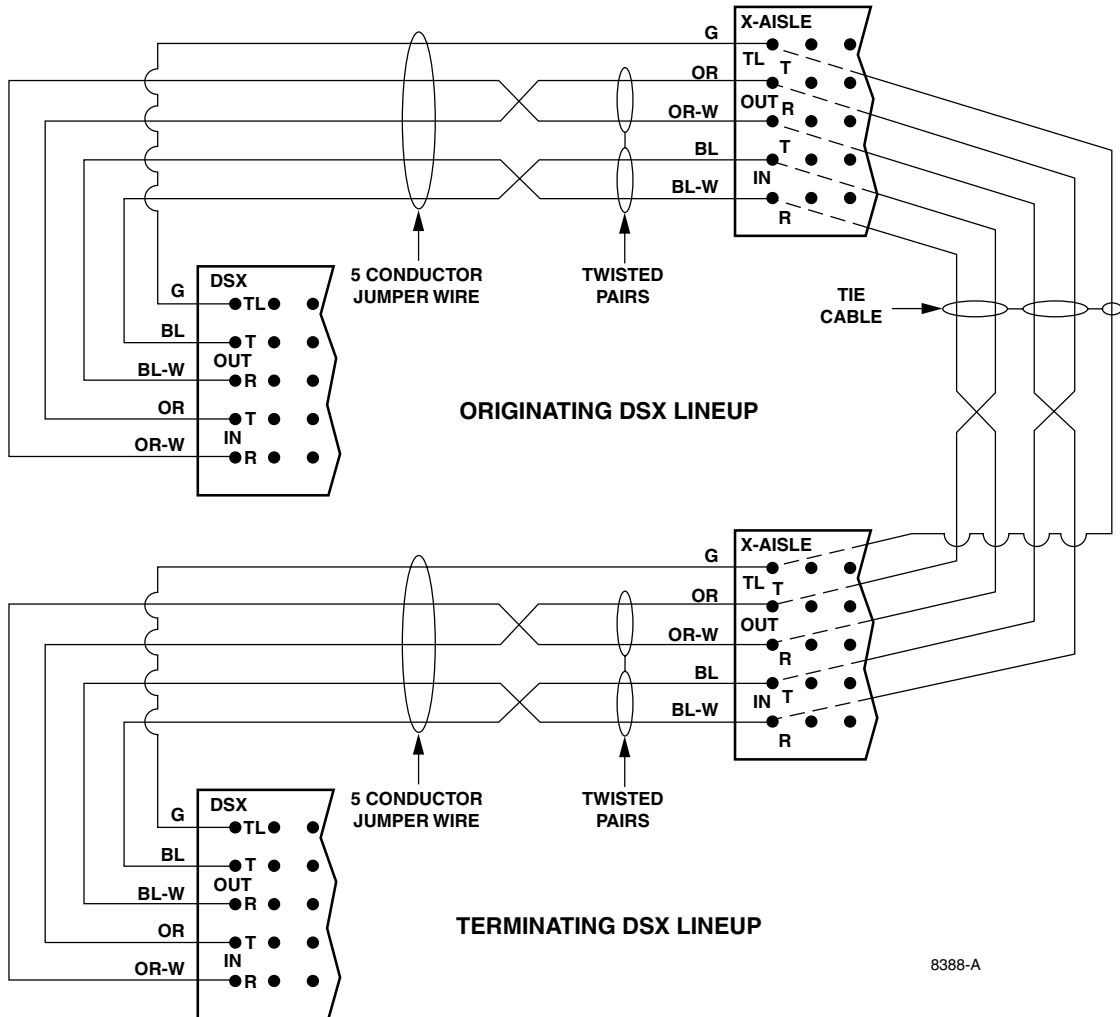


Figure 6. Typical Cross-Connect Tie Arrangement

4.4.3 Cross-Connect Wiring

Using five conductor 24 AWG jumper wire cross-connect the DSX circuits to the Cross-Aisle Panel as shown in Figure 7.



8388-A

Figure 7. Typical DSX-1/1C Cross-Connect Tie Wiring

In the originating DSX lineup make the connections as follows:

1. Connect the TL (green wire) from the DSX circuit to the TL on the cross-aisle tie circuit.
2. Connect the OUT (blue wire and blue-white wire) from the DSX circuit to the IN on the cross-aisle tie circuit.
3. Connect the IN (orange and orange-white wire) from the DSX circuit to the OUT on the cross-aisle tie circuit.

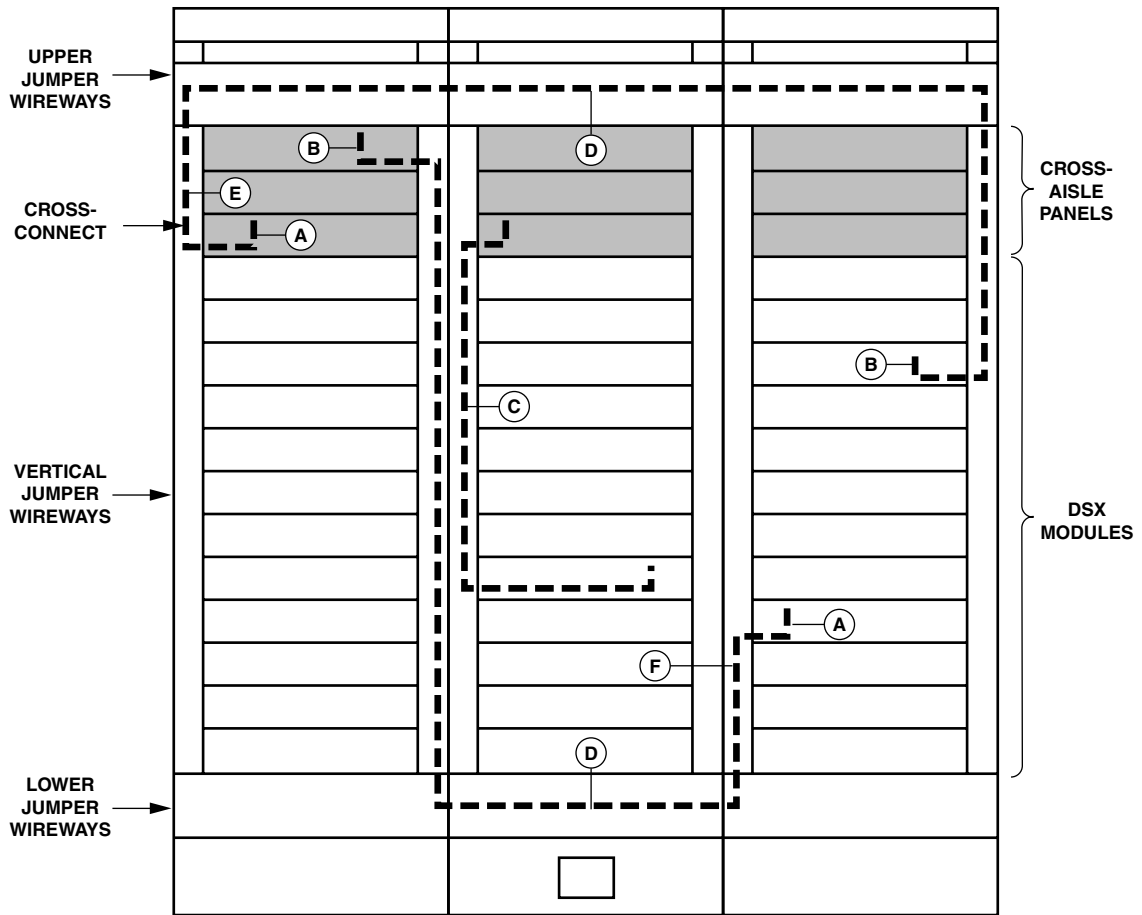
In the terminating DSX lineup make the connections as follows:

1. Connect the TL (green wire) from the cross-aisle tie circuit to the TL on the DSX circuit.
2. Connect the OUT (orange and orange-white wire) from the cross-aisle tie circuit to the IN on the DSX circuit.
3. Connect the IN (blue wire and blue-white wire) from the cross-aisle tie circuit to the OUT on the DSX circuit.

Remove any discontinued jumpers by disconnecting each end and cutting off the bare ends. Remove each end of the jumper from the vertical wireways, and carefully remove the jumper from the horizontal wireway by pulling at either end. This method of removal allows the jumper to be removed without snagging or placing undo strain on the remaining jumpers.

[Figure 8](#) shows the recommended method of routing cross-connect wiring. Following the rules listed below the figure will assure minimal wire congestion, optimal traceability, ease of installation, and maintenance.

Whenever a cross-connect changes direction, it should do so at a point where a ring, tray, or fanning strip is placed. This will allow the cross-connect to be dressed neatly with no strain and without interfering with any other portion of the bays. All cross-connect jumpers should use the horizontal wireways between bays, and the vertical wireways within the bays.



ROUTING RULES

- A. ALL JUMPERS IN THE LEFT-HAND SIDE OF THE CROSS-CONNECT FIELD SHOULD ENTER AND LEAVE THE BAY FROM THE LEFT VERTICAL WIREWAYS.
- B. ALL JUMPERS IN THE RIGHT-HAND SIDE OF THE CROSS-CONNECT FIELD SHOULD ENTER AND LEAVE THE BAY FROM THE RIGHT VERTICAL WIREWAYS.
- C. ALL INTRABAY CROSS-CONNECTS SHOULD USE THE VERTICAL RINGS.
- D. ALL INTERBAY CROSS-CONNECTS SHOULD USE THE HORIZONTAL WIREWAYS.
- E. ALL JUMPERS ORIGINATING IN THE UPPER HALF OF THE CROSS-CONNECT FIELD SHOULD ROUTE VIA THE UPPER HORIZONTAL WIREWAYS.
- F. ALL JUMPERS ORIGINATING IN THE LOWER HALF OF THE CROSS-CONNECT FIELD SHOULD ROUTE VIA THE LOWER HORIZONTAL WIREWAYS.

8389-A

Figure 8. Typical DSX Cross-Connect Routing

5 CUSTOMER INFORMATION AND ASSISTANCE

For customers wanting information on ADC products or help in using them, ADC offers the services listed below. To obtain any of these services by telephone, first dial the central ADC telephone number, then dial the extension provided below.

The central number for calls originating in the U.S.A. or Canada is **1-800-366-3891**. For calls originating outside the U.S.A. or Canada, dial country code "1" then dial **952-946-3000**.

Sales Assistance Extension 63000	<ul style="list-style-type: none"> • Quotation Proposals • Ordering and Delivery • General Product Information
Systems Integration Extension 63000	<ul style="list-style-type: none"> • Complete Solutions (from Concept to Installation) • Network Design and Integration Testing • System Turn-Up and Testing • Network Monitoring (Upstream or Downstream) • Power Monitoring and Remote Surveillance • Service/Maintenance Agreements • Systems Operation
BCG Technical Assistance Center Extension 63475 E-Mail: bcg_tac@adc.com	<ul style="list-style-type: none"> • Technical Information • System/Network Configuration • Product Specification and Application • Training (Product-Specific) • Installation and Operation Assistance • Troubleshooting and Repair
Product Return Department Extension 63748 E-Mail: repair&return@adc.com	<ul style="list-style-type: none"> • ADC Return Authorization number and instructions must be obtained before returning products.

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