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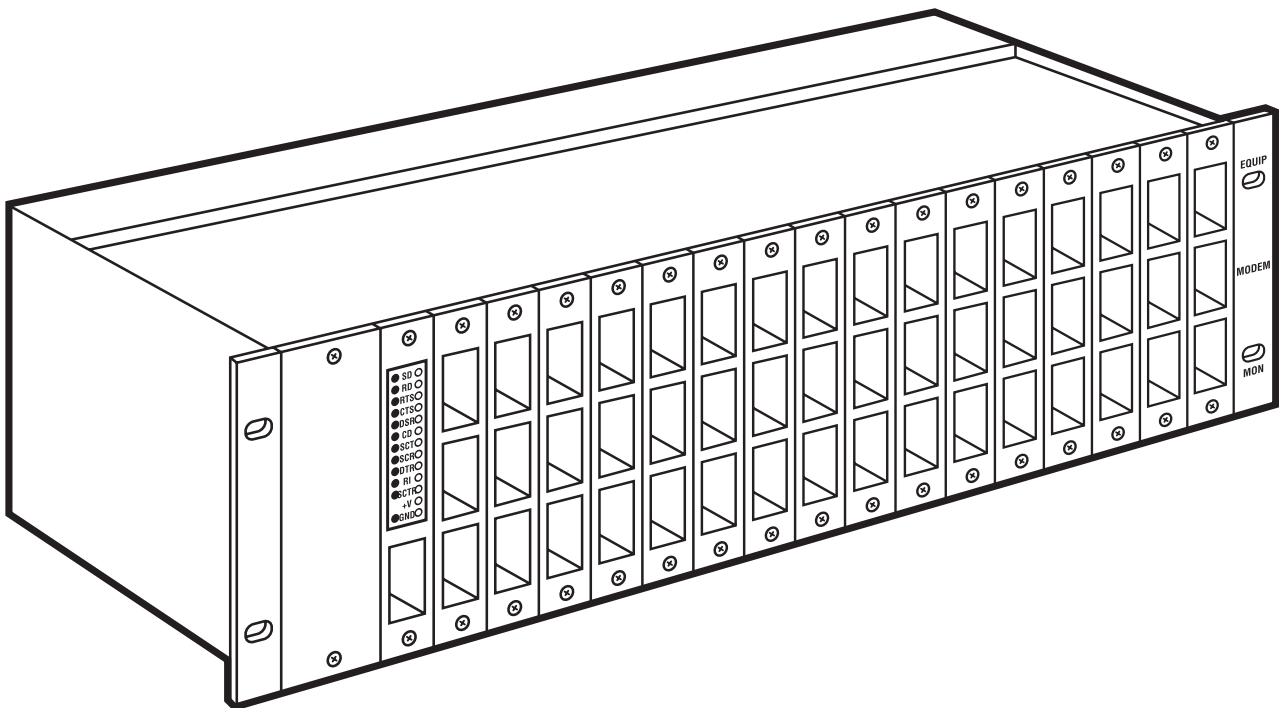
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MARCH 2001

JPM260	JPM265
JPM261E	JPM266E
JPM262	JPM267
JPM263	JPM268
JPM264	JPM269
	JPM270

RS-232 and V.35 Standard Patch Panels



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1. Todas las instrucciones de seguridad y operación deberán ser leídas antes de que el aparato eléctrico sea operado.
2. Las instrucciones de seguridad y operación deberán ser guardadas para referencia futura.
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11. El aparato eléctrico deberá ser conectado a una fuente de poder sólo del tipo descrito en el instructivo de operación, o como se indique en el aparato.
12. Precaución debe ser tomada de tal manera que la tierra física y la polarización del equipo no sea eliminada.
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14. El equipo eléctrico debe ser limpiado únicamente de acuerdo a las recomendaciones del fabricante.
15. En caso de existir, una antena externa deberá ser localizada lejos de las líneas de energía.
16. El cable de corriente deberá ser desconectado del cuando el equipo no sea usado por un largo periodo de tiempo.
17. Cuidado debe ser tomado de tal manera que objetos líquidos no sean derramados sobre la cubierta u orificios de ventilación.
18. Servicio por personal calificado deberá ser provisto cuando:
 - A: El cable de poder o el contacto ha sido dañado; u
 - B: Objetos han caído o líquido ha sido derramado dentro del aparato; o
 - C: El aparato ha sido expuesto a la lluvia; o
 - D: El aparato parece no operar normalmente o muestra un cambio en su desempeño; o
 - E: El aparato ha sido tirado o su cubierta ha sido dañada.

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1. Specifications

Interface—Physical: DB25 or M/34; Transmission: RS-232 or V.35

Protocols—Transparent to all protocols (physical layer)

System Capacity—(1) test module per chassis; (16) patch modules per chassis

Activity Indicators—(1) set of activity LEDs per test module; (1) set of activity LEDs per patch module

Test Points—(1) set per test module

Contacts—Gold-plated, self-wiping

Power—JPM260, JPM265: 110 VAC; JPM261E, JPM266E: 220 VAC

Size—JPM260, JPM261E: 5.25"H x 19"W x 5"D (13.3 x 48.3 x 12.7 cm); JPM265, JPM266E: 5.25"H x 19"W x 7"D (13.3 x 48.3 x 17.8 cm); JPM262, JPM263, JPM264, JPM267, JPM268, JPM269: 5.25"H x 29/32"W x 5"D (13.4 x 2.3 x 12.7 cm)

Weight—JPM260, JPM261E: 10 lb. (4.5 kg); JPM265, JPM266E: 14 lb. (6.4 kg); JPM262, JPM263, JPM264, JPM267, JPM268, JPM269: 4 oz. (113 g)

2. Introduction

2.1 Overview

The Standard Patch Panel supports data transmission speeds of up to 2 Mbps. The system is transparent to all protocols. Depending on the system configuration, the interfaces supported can include RS-232/V.24 (DB25) or V.35 (DB25 or M/34). The two types of modules that can be installed with the Patch Panel are test modules and patch modules.

2.1.1 TEST MODULES

A Standard Patch Panel chassis can house one test module. Each test module includes circuit activity LEDs and associated test points, a front-panel monitor patch cavity, a connection to a rear chassis monitor port (DB25) for optional external test equipment, and a lamp test button.

2.1.2 PATCH MODULES

A Standard Patch Panel chassis can house up to 16 patch modules. Each patch module includes circuit activity LEDs, a front-panel monitor patch cavity, a front-panel DCE patch cavity, a front panel DTE patch cavity, and a connection to a set of rear chassis DCE/DTE ports (DB25 or M/34).

2.1.3 ACCESS MODULES

The Standard Access Module is used mainly for connecting a tester that doesn't have patch capability. It allows the patch in the front to go directly to the DB connectors on the back of the chassis.

2.2 Parts Description

Depending on the system's configuration, the Standard Patch Panel may include the following parts: rack chassis, test modules, patch modules, blank panel, power supply, this users' manual, and accessories.

2.2.1 RACK CHASSIS

JPM260	RS-232 Standard Patch Panel Chassis with 110-VAC power supply
JPM261E	RS-232 Standard Patch Panel Chassis with 220-VAC power supply
JPM265	V.35 Standard Patch Panel Chassis with 110-VAC power supply
JPM266E	V.35 Standard Patch Panel Chassis with 220-VAC power supply

2.2.2 TEST MODULES

JPM264	RS-232 Standard Monitoring Module
JPM269	V.35 Standard Monitoring Module

2.2.3 PATCH MODULES

JPM262	RS-232 Standard Patch Module with 5 LEDs
JPM267	V.35 Standard Patch Module with 5 LEDs

RS-232 AND V.35 STANDARD PATCH PANELS

2.2.4 ACCESS MODULES

JPM263	RS-232 Standard Access Module with 5 LEDs
JPM268	V.35 Standard Access Module with 5 LEDs

2.2.5 BLANK PANEL

JPM270	Blank Panel
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2.2.6 ACCESSORIES

You'll also need patch cords and test patch cords (part number JPM258 [2-ft.] or JPM259 [6-ft.]). For details, call Black Box Technical Support at 724-746-5500.

2.3 Hardware Summary

2.3.1 FRONT CHASSIS

Identifying Modules

The leftmost slot in the chassis is the only slot capable of using a test module. Test modules are not assigned a number. It corresponds to the DB25 interface on the rear chassis labeled "TEST EQUIP."

Each chassis provides 16 slots for patch modules. Patch modules are numbered from left to right, 1 through 16. Each patch module corresponds to the DCE and DTE interface of the same number on the rear chassis.

Figure 2-1 illustrates the Standard Patch Panel front-panel naming and numbering conventions.

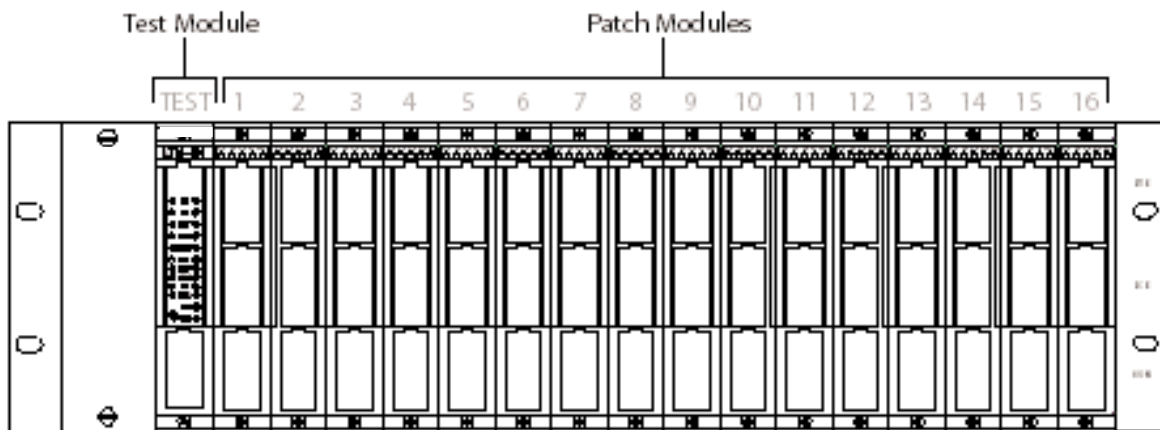


Figure 2-1. Front-panel naming and numbering conventions.

Identifying Patch Cavities

Labels identifying the DTE, DCE, and MON patch cavity rows are found on the front chassis' right mounting ear. Patch cavities are referred to by module number/name and function.

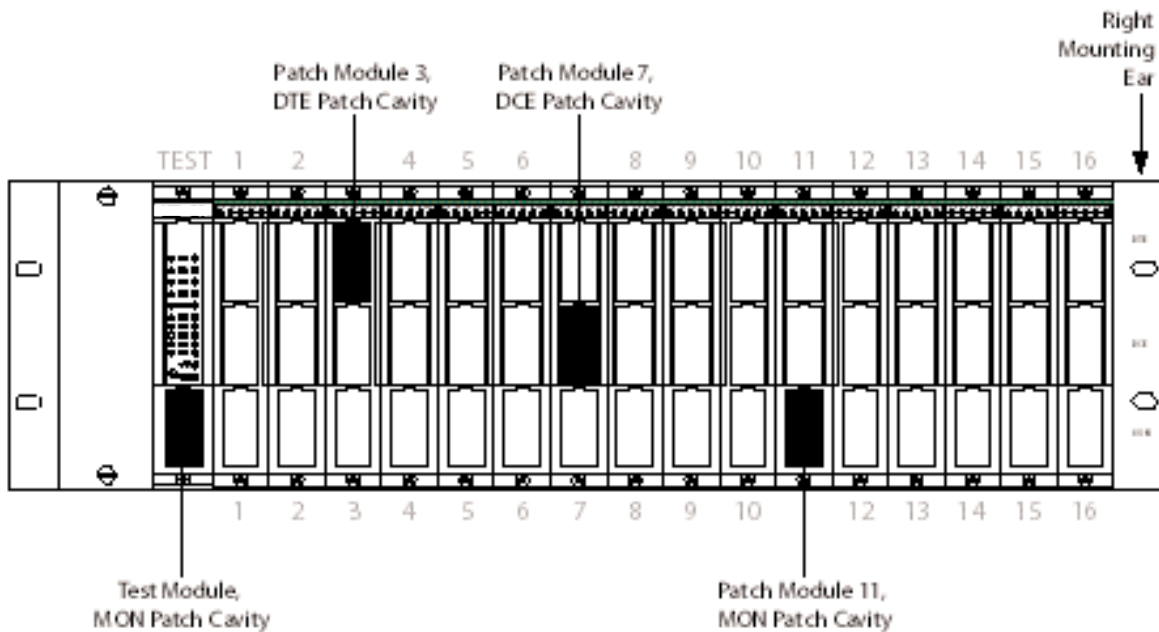


Figure 2-2. Identifying patch cavities.

2.3.2 REAR CHASSIS

The Standard Patch Panel’s rear chassis layout can include two configurations: DB25 male/female or M/34 male/female.

DB25 male/female

The DB25 male/female configuration corresponds to the RS-232 compliant chassis. In this configuration, the rear of the chassis consists of: (16) DB25 male DCE ports, (16) DB25 female DTE ports, (1) DB25 female test equipment port, (1) DB25 female control/converter port (reserved for future use), (1) 110/220 VAC jack, and (1) -48 VDC jack (for optional -48 VDC power supply).

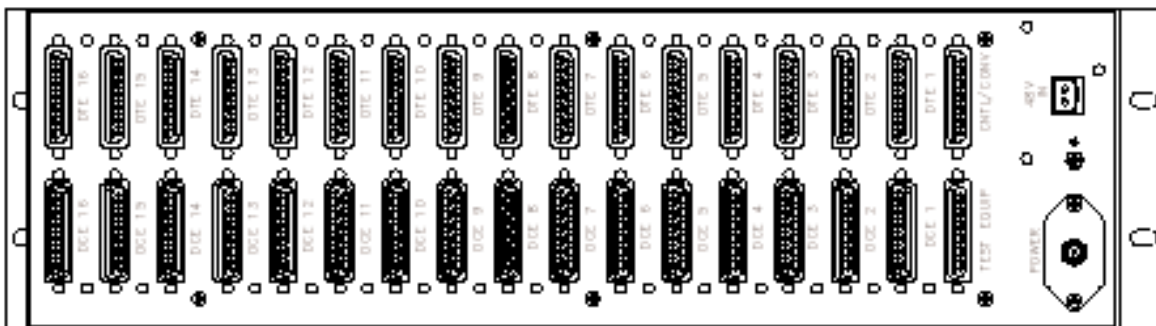


Figure 2-3. DB25 male/female rear chassis configuration.

RS-232 AND V.35 STANDARD PATCH PANELS

M/34 male/female

The M/34 male/female configuration corresponds to the V.35 compliant chassis only. In this configuration, the rear of the chassis consists of: (16) M/34 male DCE ports, (16) M/34 female DTE ports, (1) DB25 female test equipment port, (1) DB25 female control/converter port (reserved for future use), (1) 110/220 VAC jack, and (1) -48 VDC jack (for optional -48 VDC power supply).

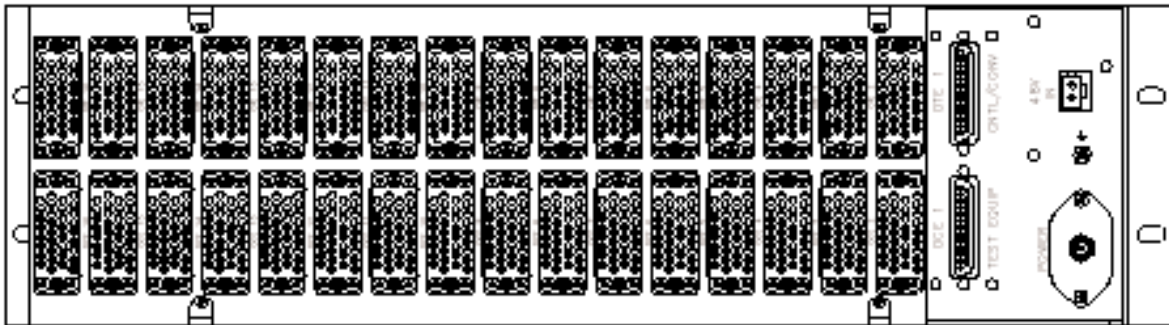


Figure 2-4. M/34 male/female rear chassis configuration.

2.3.3 TEST MODULES

All test modules allow for the same signal pathways. Figure 2-5 illustrates the signal pathways for all test modules.

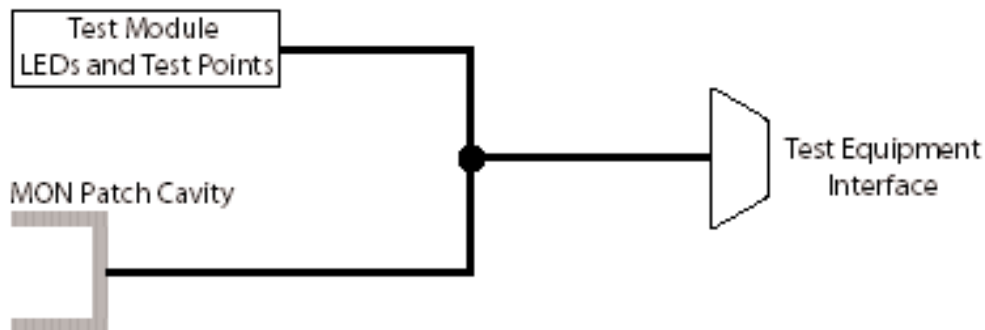


Figure 2-5. Test module signal pathways.

The different types of test modules include RS-232 Test Module and V.35 Test Module.

RS-232 Test Module

The RS-232 compliant test module is labeled JPM264. Figure 2-6 illustrates the elements found on the front panel.

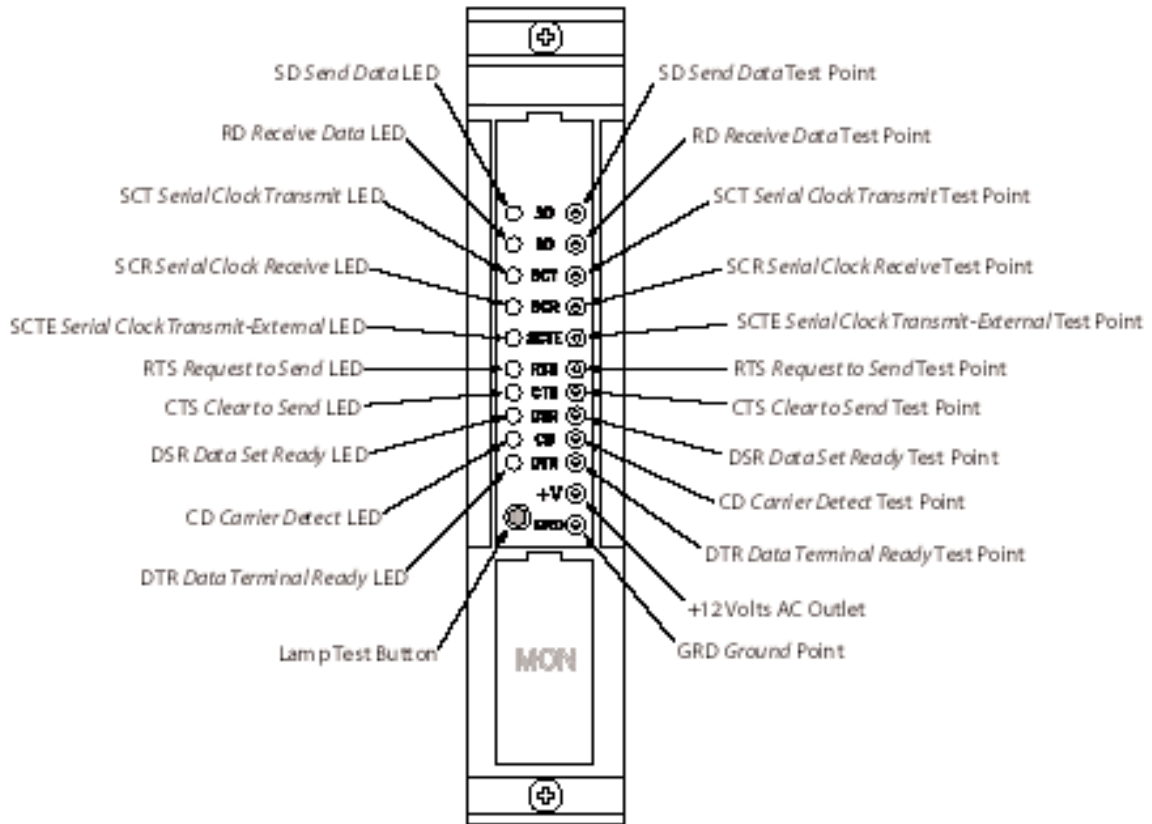


Figure 2-6. RS-232 test module.

RS-232 AND V.35 STANDARD PATCH PANELS

V.35 Test Module

Figure 2-7 illustrates the front panel of the V.35 compliant test module (JPM269).

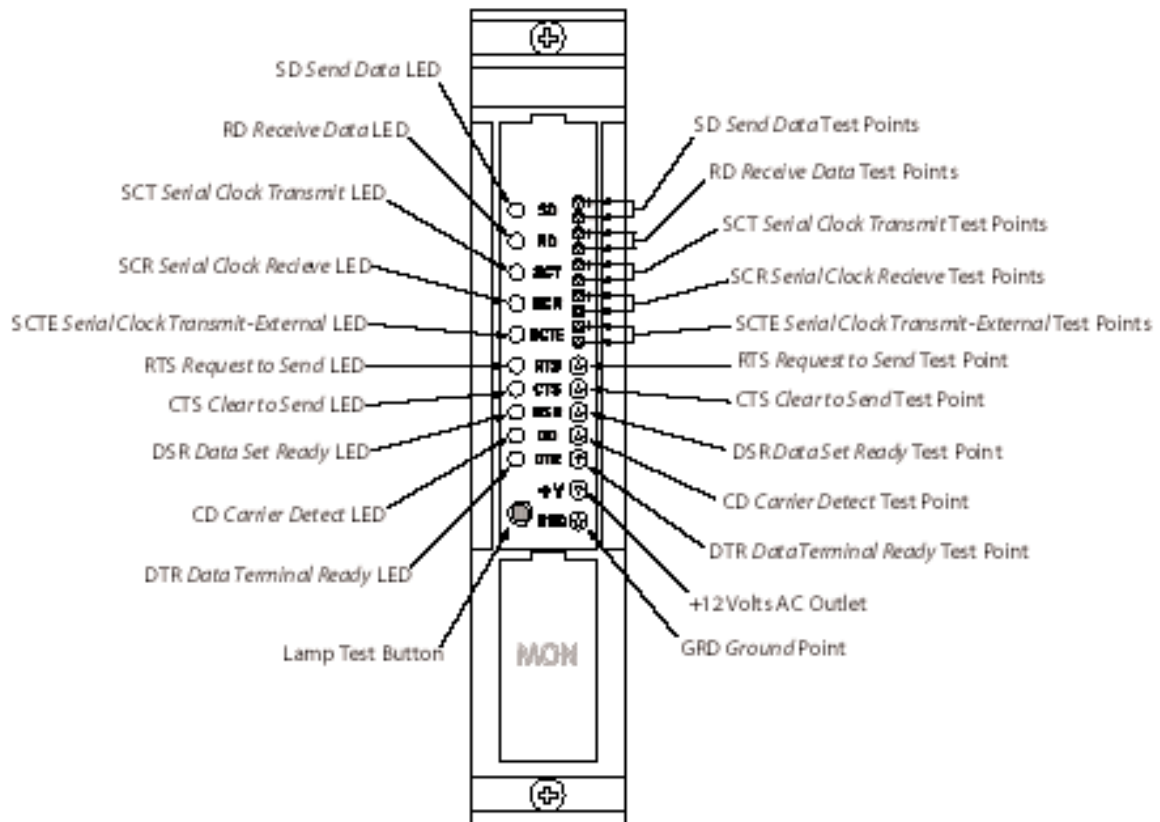


Figure 2-7. V.35 test module.

2.3.4 PATCH MODULES

All patch modules allow for the same signal pathways. Figure 2-8 illustrates the signal pathways for all patch modules.

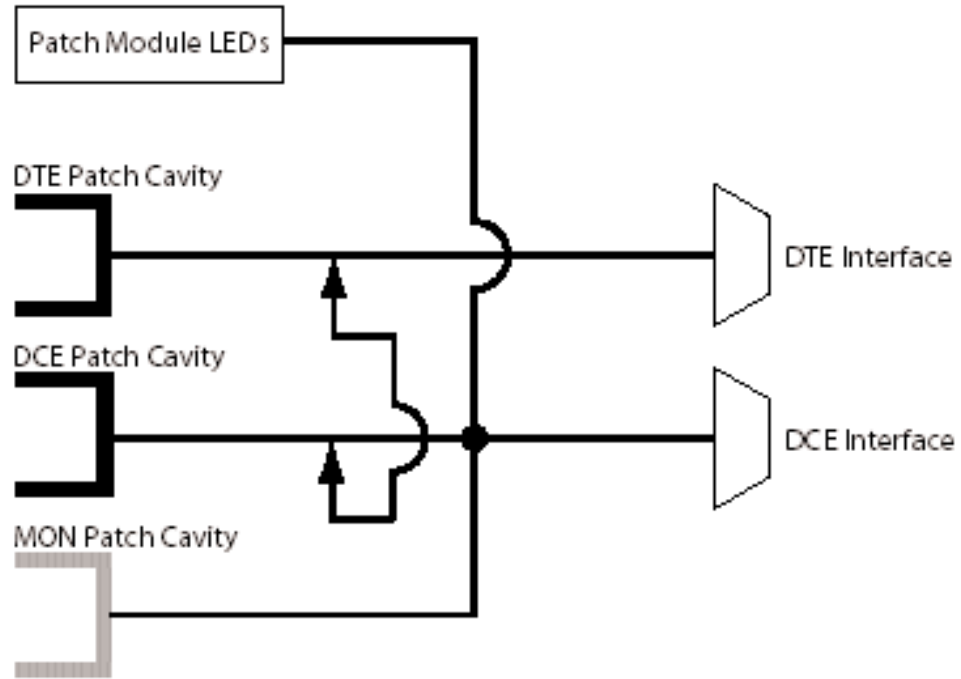


Figure 2-8. Patch modules signal pathways.

RS-232 AND V.35 STANDARD PATCH PANELS

Patch Module Elements

The RS-232 and V.35 compliant patch modules are identical in appearance from the front side. The following picture shows the front panel.

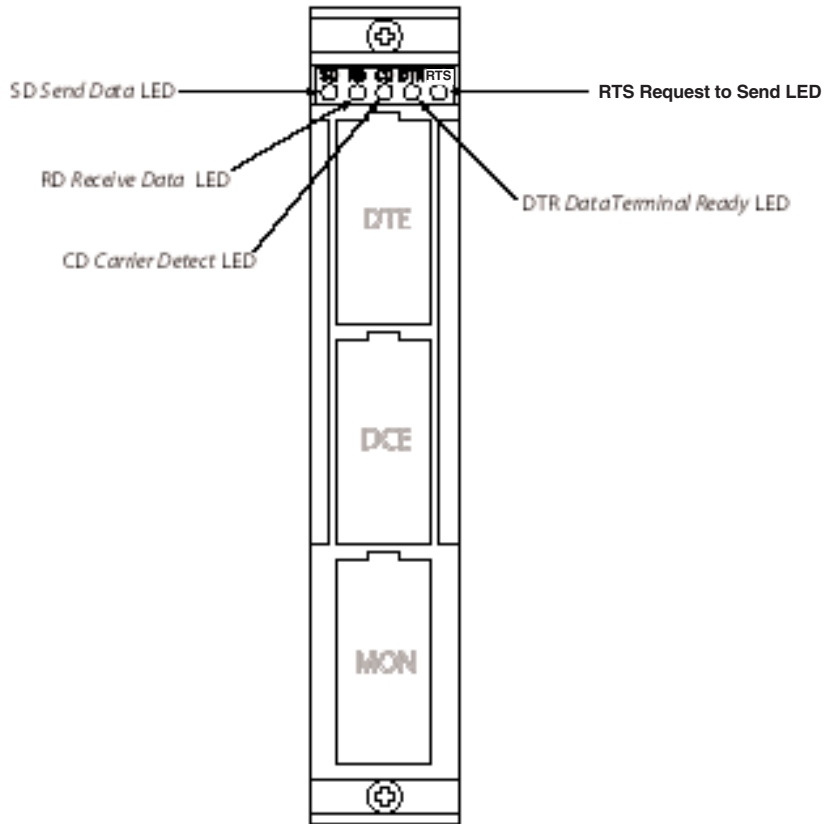


Figure 2-9. Front panel of the patch modules.

2.3.5 ACCESS MODULES

The Standard Access Module is used mainly for connecting a tester that doesn't have patch capability. It allows the patch in the front to go directly to the DB connectors on the back of the chassis.

2.3.6 POWER SUPPLY

The Standard Patch Panel is available in 110-VAC or 220-VAC models.

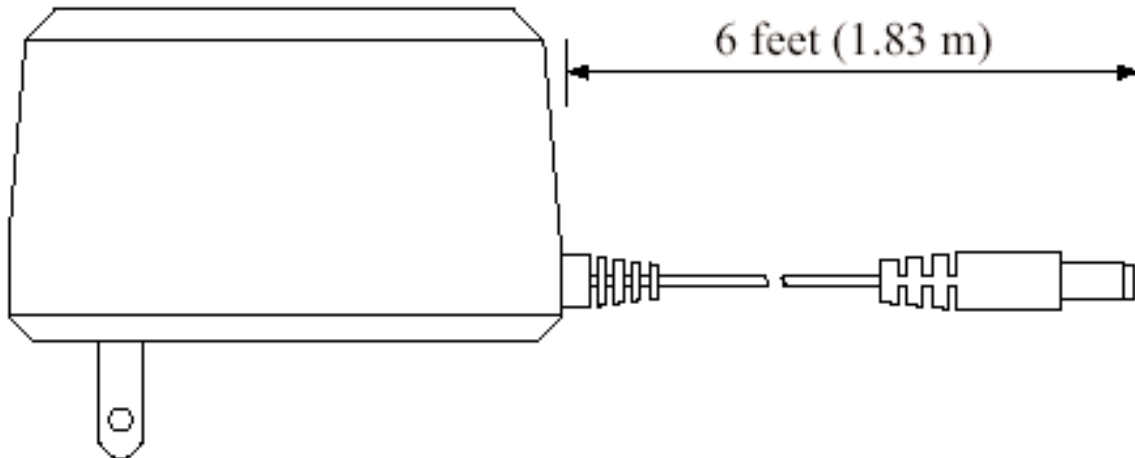
110-VAC power supply

Figure 2-10. 110-VAC power supply.

220-VAC power supply

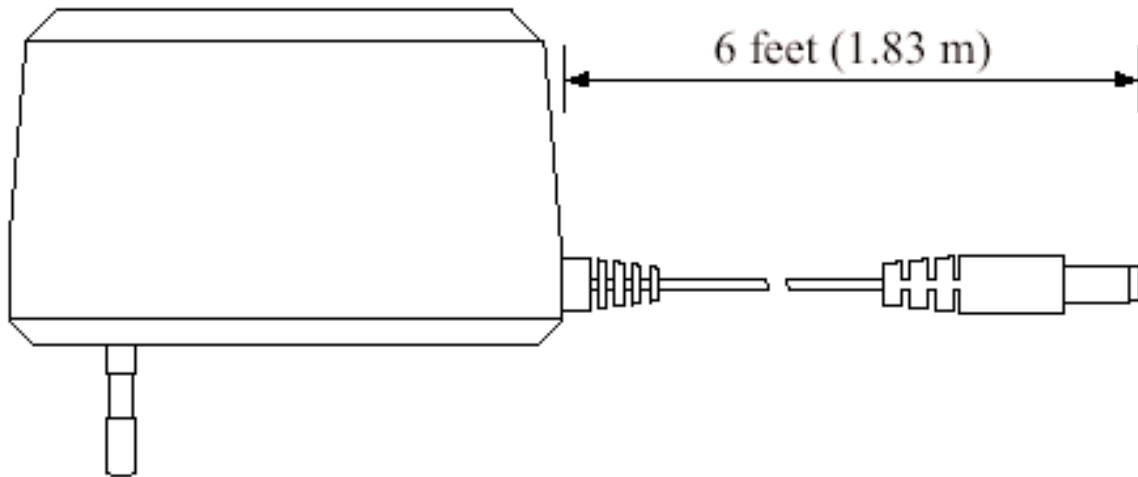


Figure 2-11. 220-VAC power supply.

2.4 Software Summary

The Standard Patch Panel does not require software.

3. Installation

3.1 Inspecting the Standard Patch Panel

Check the unit for possible damage. If anything is missing or damaged, call Black Box at 724-746-5500.

3.2 Mounting the Standard Patch Panel

Consider these factors when mounting the Patch Panel: site environmental recommendations, rack mounting specifications, and chassis mounting procedure.

3.2.1 SITE ENVIRONMENTAL RECOMMENDATIONS

When selecting a site to install the Patch Panel, choose a protected area in an environment that is air conditioned, humidity controlled, and away from large motors and heating units.

We recommend that the site meet the Bellcore/Telcordia NEBS environmental criteria for operating temperature and humidity.

3.2.2 RACK MOUNTING SPECIFICATIONS

The Patch Panel Chassis mounts in a NEMA standard 19" rack and occupies 5.25 inches (13.3 cm or 3 rack units) of vertical space.

3.2.3 CHASSIS MOUNTING PROCEDURE

To mount the Chassis on a rack, attach it to the rack with four screws, two through each mounting ear.

NOTE

Use all four screws to secure the chassis properly in the rack.

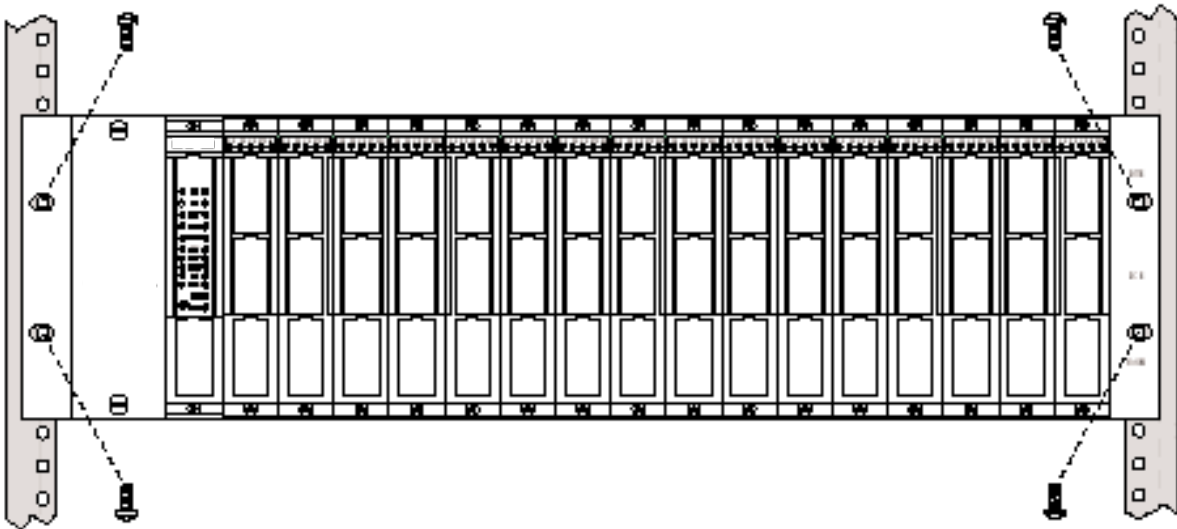


Figure 3-1. Mounting the chassis in a rack.

3.3 Adding and Removing Modules

All Standard Patch Panel modules are hot-swappable. You do not have to power down to add or remove a module. Adding or removing a module will not cause an interruption in service.

WARNING

Always follow anti-static procedures when adding or removing a module. If you don't, the module may be damaged.

3.3.1 ADDING MODULES

To add a module:

1. Insert the rear top and bottom module card edges into the chassis guide rails.
2. Push the module straight in along the chassis guide rails until the module encounters resistance. Push the module parallel with the guide rails; otherwise, the module and/or guide rails may be damaged.
3. Push the module to seat it properly. The module's front panel casing should be touching the chassis.
4. Install the two mounting screws (one at the top and one at the bottom of the module's front panel).

3.3.2 REMOVING MODULES

To remove a module:

1. Remove the two mounting screws at the top and bottom of the module's front panel.
2. Pull the module straight out along the chassis guide rails. Pull the module parallel with the guide rails; otherwise, the module and/or guide rails may be damaged.

NOTE

Use a module-extracting tool to remove the module.

3.3.3 USING BLANK PANELS

Fill all empty module slots on the Standard Patch Panel chassis with blank panels. This will help prevent damage to installed test and patch modules.

3.4 Connecting External Test Equipment

The right rear of the Standard Patch Panel chassis includes a DB25 female port labeled “TEST EQUIP” that facilitates a connection to external test equipment. This port interfaces with the test module. The following diagram below illustrates how external test equipment connects to the Patch Panel chassis.

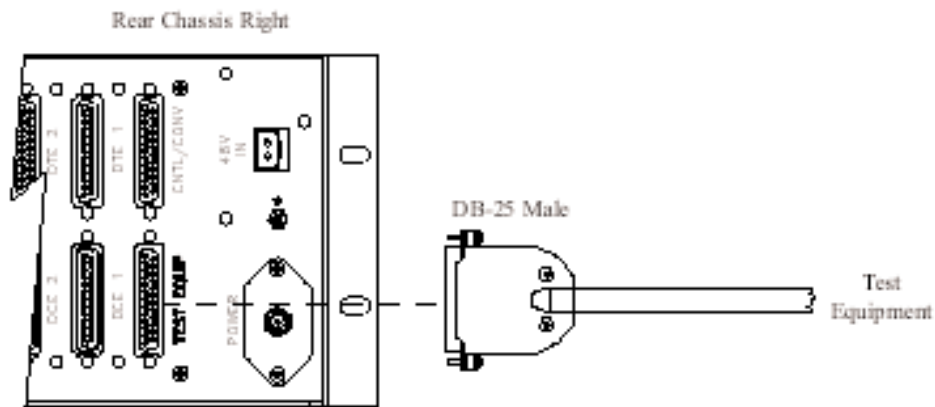


Figure 3-2. Connecting external test equipment to the Patch Panel chassis.

3.5 Connecting the Power Supply

The Standard Patch Panel chassis requires power to operate all module LEDs and the +12 volts outlet on the test modules. To add power to the chassis:

1. Connect the power supply to the port labeled “POWER” on the right rear of the chassis.
2. Connect the power supply to the appropriate 110- or 220-VAC power source (see Figure 3-3).

NOTE

The power supply has a 6-ft. (1.8-m) cord.

RS-232 AND V.35 STANDARD PATCH PANELS

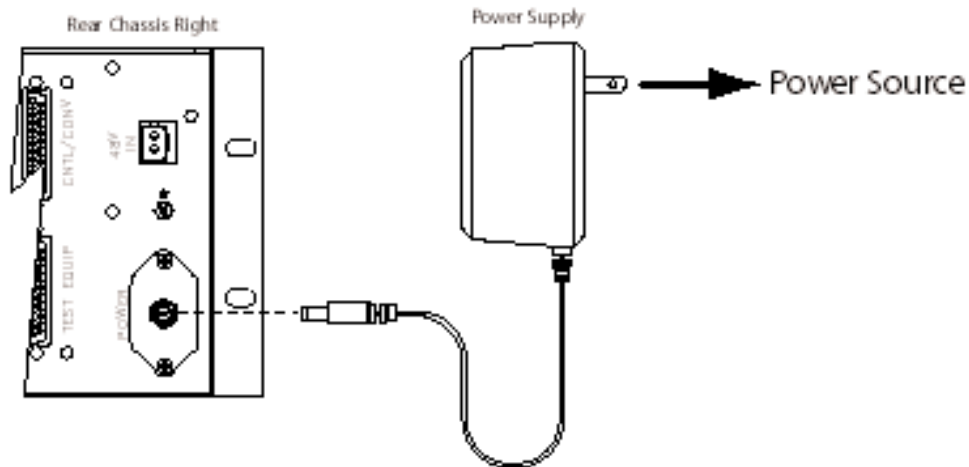


Figure 3-3. Power connection (110 VAC).

NOTE

The Standard Patch Panel chassis has a port labeled “48V IN,” which is used for an optional internal -48 VDC power supply.

PERFORMING A LAMP TEST

To check the function of the LEDs:

1. Push the Lamp Test button on the test module to perform a lamp test. All the test and patch module LEDs should light. The diagram below illustrates the lamp test button's location.

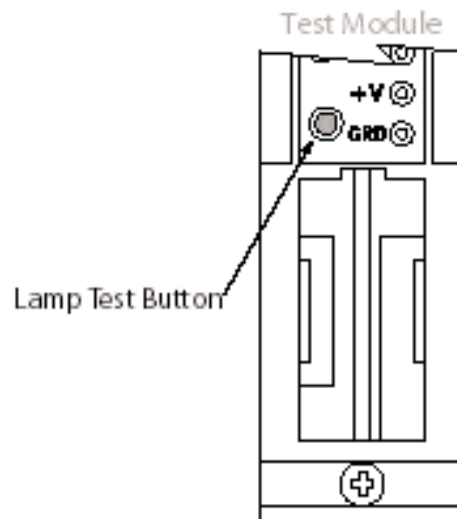


Figure 3-4. The lamp test button on the test module.

2. If all the test and patch module LEDs do not light, recheck the power connections and the seating of the modules.
3. Perform the lamp test again.
4. If all of the test module and patch module LEDs still do not light, call Black Box Technical Support at 724-746-5500 for assistance.

3.6 Labeling the Modules

We recommend that you label the front of each patch module with a number for easy reference.

Consider two special cases when labeling modules: (1) different patch module interface types in the same chassis and (2) test modules.

3.6.1 DIFFERENT PATCH MODULE INTERFACE TYPES IN THE SAME CHASSIS

When installed, there are no external indicators on any patch module to identify the interface type. If the Standard Patch Panel chassis contains a mix of different patch module interface types, label the front of each patch module by the interface type (RS-232 or V.35).

3.6.2 TEST MODULE

When installed, there are no external indicators on the Test Module to identify the interface mode configuration. We recommend that you label the front of the test module with the interface mode configuration (RS-232 or V.35).

4. Monitoring

4.1 Monitoring a Patch Module from a Test Module

When monitoring a patch module from a test module, you can use the test module to monitor the patch module alone. Or, you can connect the test module to external test equipment. When you do this, you can monitor the patch module with both the test module and the external test equipment.

To monitor a patch module from a test module, connect one end of a patch cord to the test module's MON patch cavity. Connect the opposite end of the same patch cord to the patch module's MON patch cavity (see Figure 4-1).

EXAMPLE OF MONITORING FROM A TEST MODULE

In this example, the test module's MON patch cavity is connected, via a patch cord, to patch module 2's MON patch cavity. This lets you monitor signals passing through patch module 2.

Patch-Cord Connection

Shown below is the patch cord connected to the test module and the patch module 2 MON patch cavities.

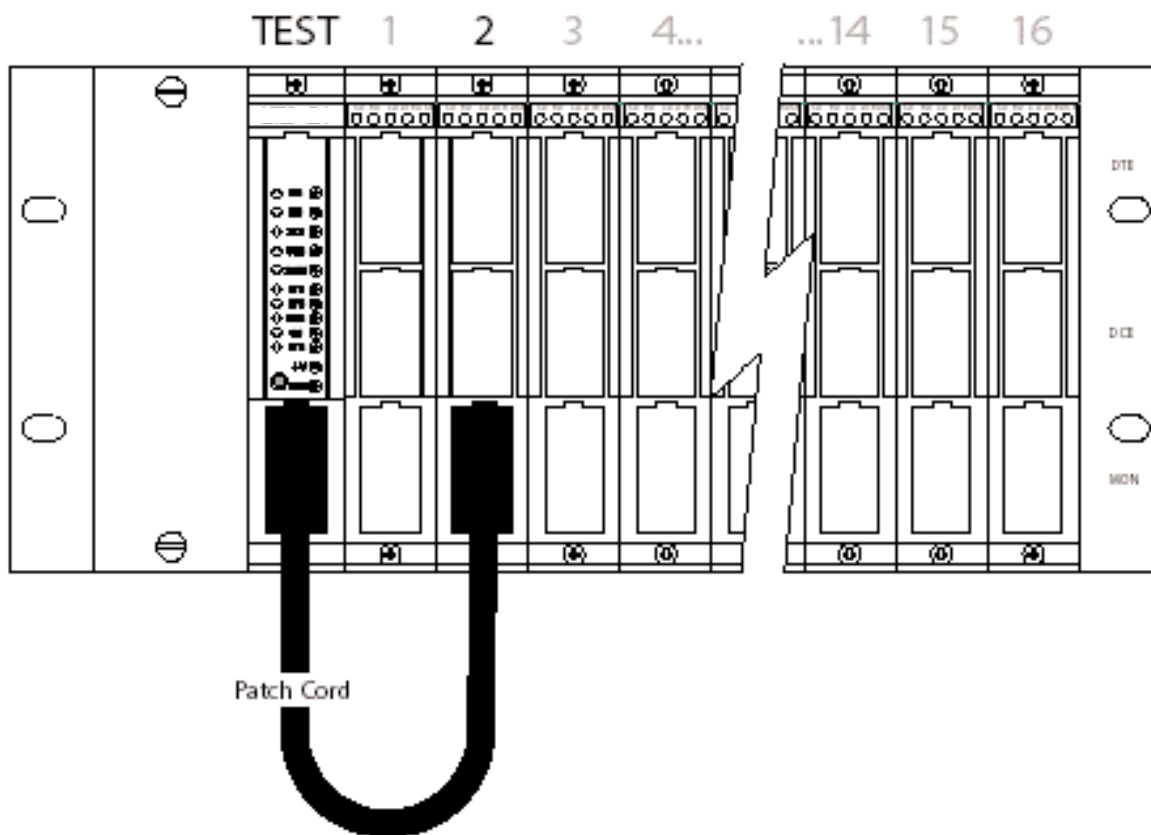


Figure 4-1. Patch-cord connection.

Signal Pathway

NOTE

The contacts connecting the DCE and the DTE paths in the patch module are closed.

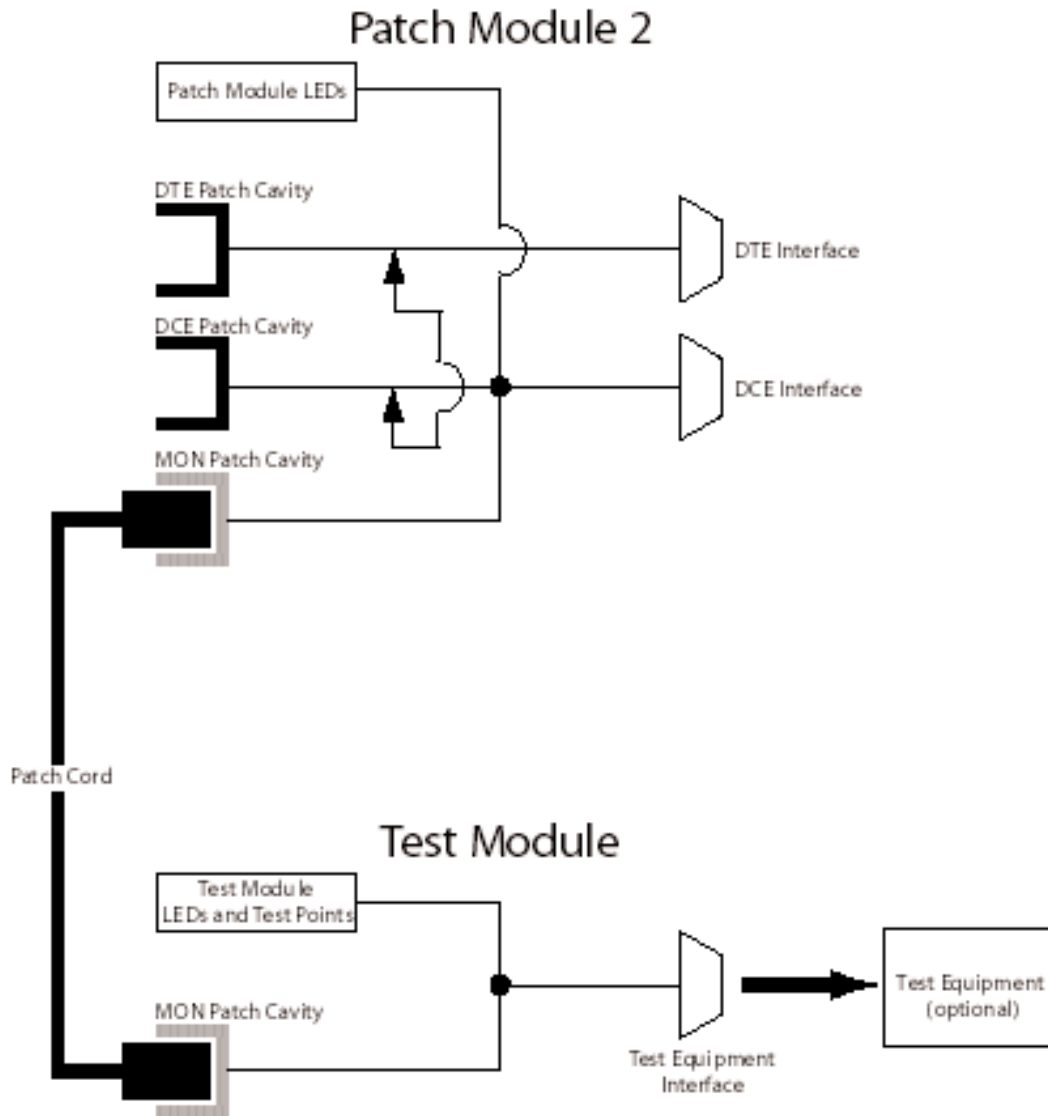


Figure 4-2. Signal pathway.

4.2 Monitoring a Patch Module from External Test Equipment

When monitoring a patch module from external test equipment, you can use the external test equipment alone to monitor a patch module. Or, you can connect the external test equipment to a test module. This lets you monitor the patch module with both the external test equipment and the test module. See **Section 4.1** for more information about using external test equipment through a test module.

RS-232 AND V.35 STANDARD PATCH PANELS

To monitor a patch module from external test equipment:

1. Connect one end of a test patch cord to the test module's MON patch cavity.
2. Connect the opposite end of the same test patch cord to the external test equipment (see Figure 4-3).

EXAMPLE OF MONITORING FROM EXTERNAL TEST EQUIPMENT

In this example, the external test equipment is connected, via a patch cord, to patch module 1's MON patch cavity. This lets you monitor signals passing through patch module 1.

Test Patch-Cord Connection

Shown below is the patch cord connected to the external test equipment and the patch module 1's MON patch cavity.

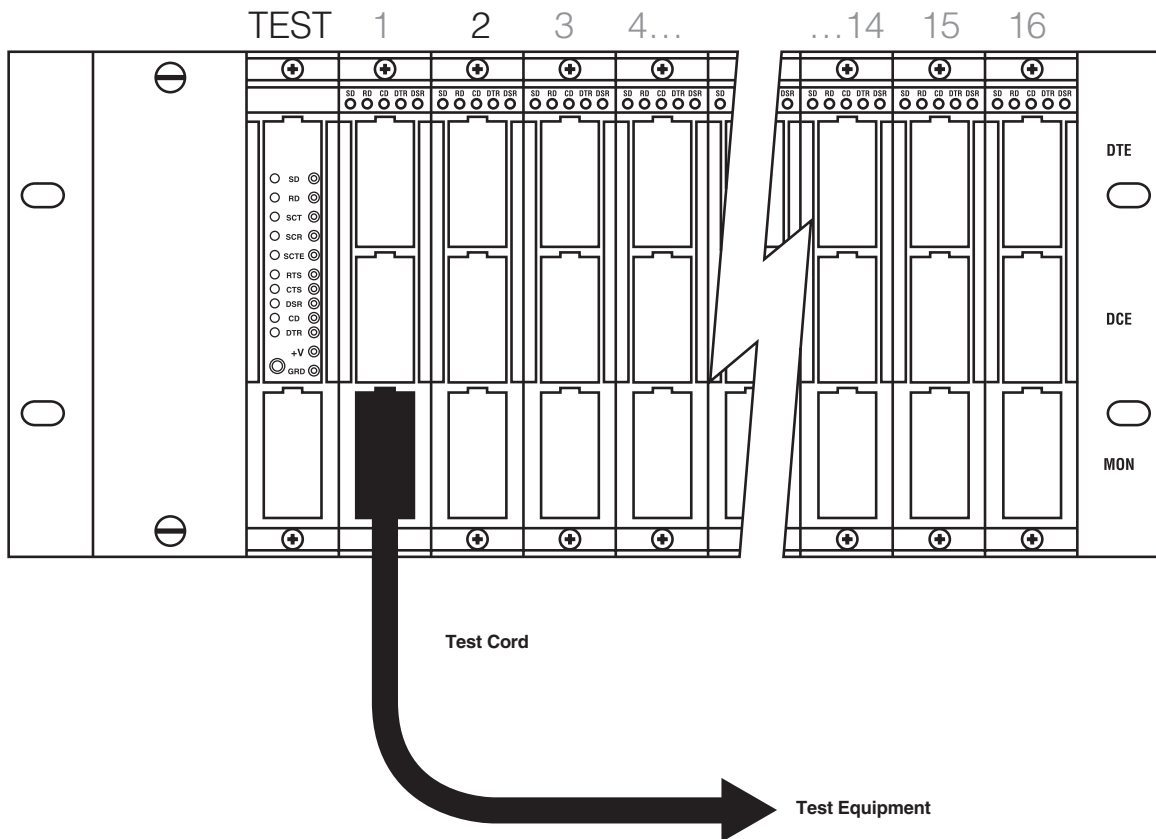


Figure 4-3. Test patch-cord connection.

Signal Path

NOTE

The contacts connecting the DCE and the DTE paths in the patch module are closed.

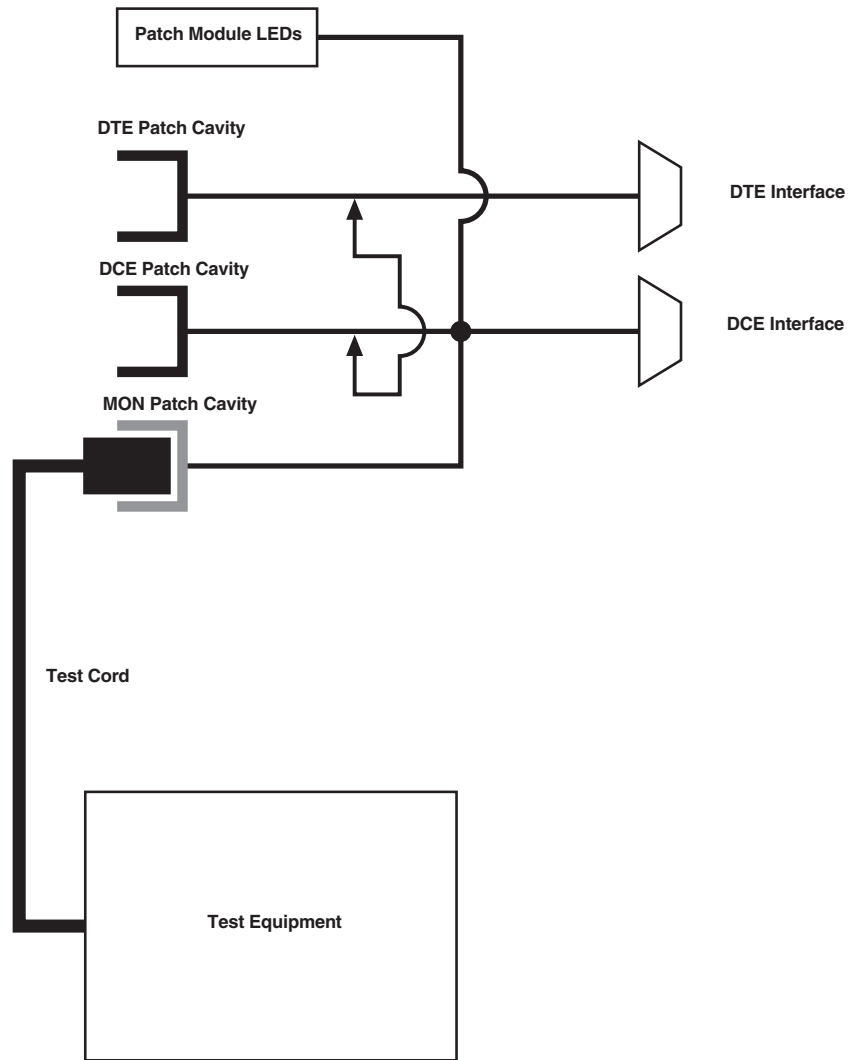


Figure 4-4. Signal pathway.

5. Cross-Connecting

Cross-Connecting Between DCE and DTE

When cross-connecting a patch module to another patch module, you can monitor the patch module's DCE signals through its MON patch cavity. See **Chapter 4** for more information. You CANNOT monitor the patch module's DTE signals through its MON patch cavity. The patch module's LEDs are connected to the DCE signals only. The circuits between each individual patch module's DCE and DTE signals are broken.

To cross-connect a patch module to another patch module:

1. Connect one end of a patch cord to the first patch module's DCE patch cavity.
2. Connect the opposite end of the same patch cord to the second patch module's DTE patch cavity (see Figure 5-1).

EXAMPLE OF CROSS-CONNECTING

In this example, patch module 1's DCE patch cavity is connected, via a patch cord, to patch module 3's DTE patch cavity.

Patch-Cord Connection

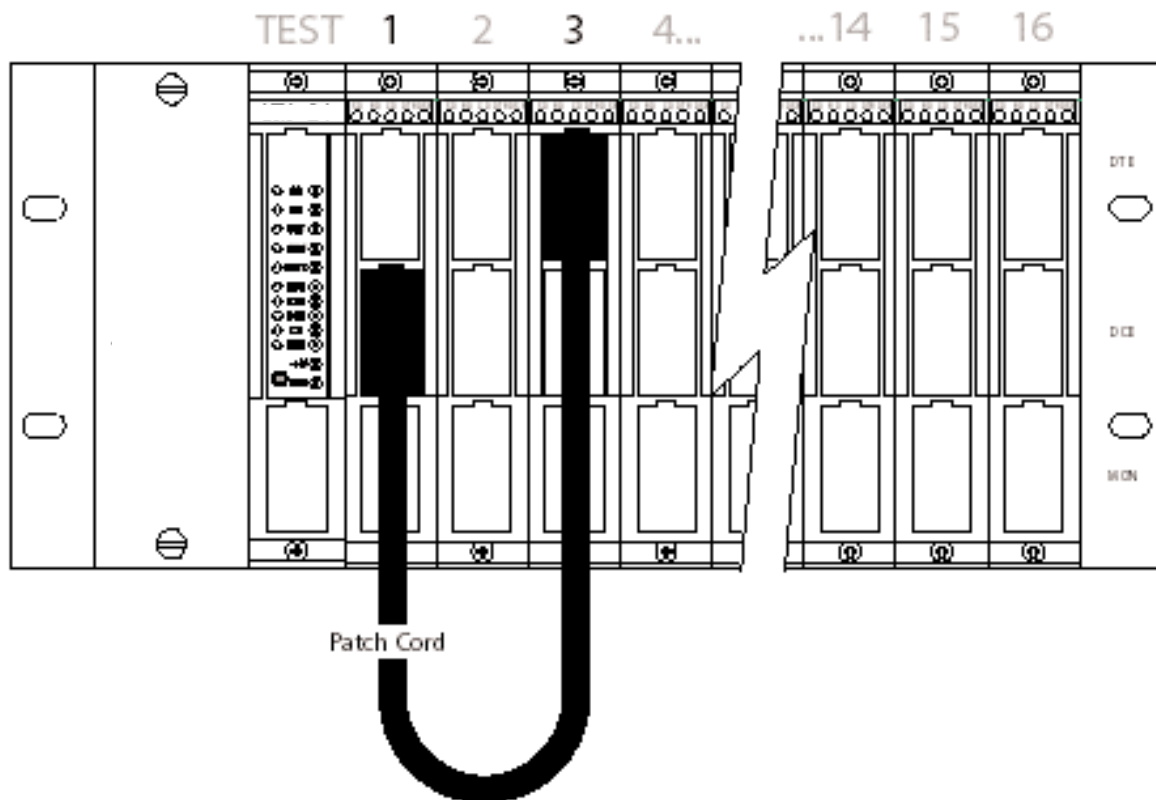


Figure 5-1. Patch cord connection.

*Signal Path***NOTE**

The contacts connecting the DCE and DTE pathway in the patch modules are open.

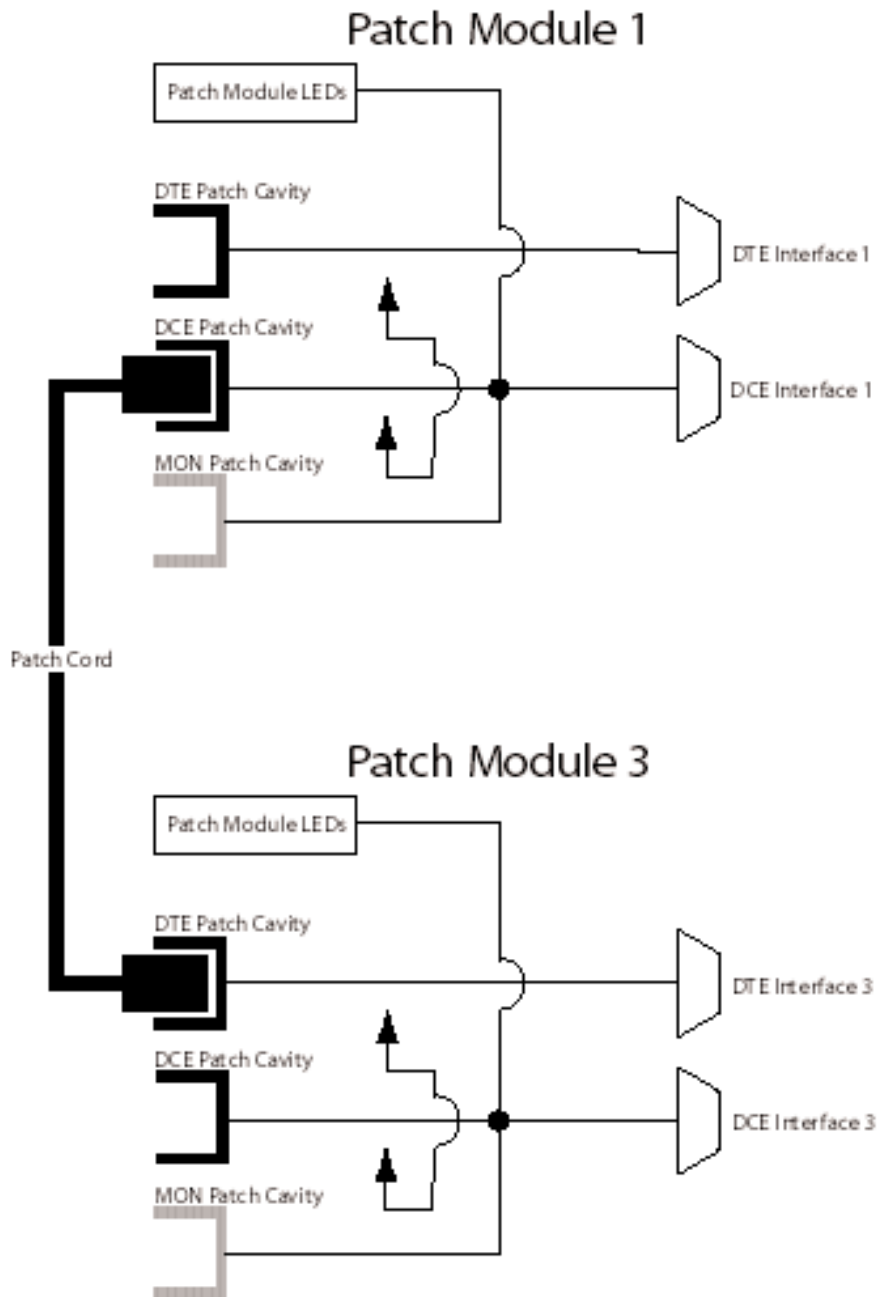


Figure 5-2. DCE to DTE signal pathway.

6. Intrusive Testing

Performing intrusive testing (a) breaks a patch module's DCE to DTE signal pathway, (b) routes the DCE or DTE signal to the test module, to external test equipment, or both, and (c) permits interactive testing of the DCE or DTE signals.

6.1 Intrusive Testing to a Patch Module DCE

During an intrusive test to a patch module DCE, you can monitor the patch module's DCE signals through its MON patch cavity. See **Chapter 4** for more information. You CANNOT monitor the patch module's DTE signals through its MON patch cavity. The patch module's LEDs are connected to the DCE signals only. The circuits between the patch module's DCE and DTE signals are broken. Only the patch module's DCE signals are connected to the test module and/or external test equipment. Interactive testing of the DCE signals is possible using the test module and/or external test equipment.

6.1.1 TEST MODULE TO DCE

To connect an intrusive test from a test module to a patch module's DCE:

1. Connect one end of a test patch cord to the patch module's DCE patch cavity (see Figure 6-1).
2. Connect the opposite end of the same test patch cord to the test module's MON patch cavity.

Example of Intrusive Testing from a Test Module

In this example, the test module's MON patch cavity is connected, via a patch cord, to patch module 2's DCE patch cavity. This permits the interactive testing of signals passing through patch module 2's DCE.

Patch-Cord Connection

Shown below is the patch cord connected to the test module MON and the patch module 2 DCE patch cavities.

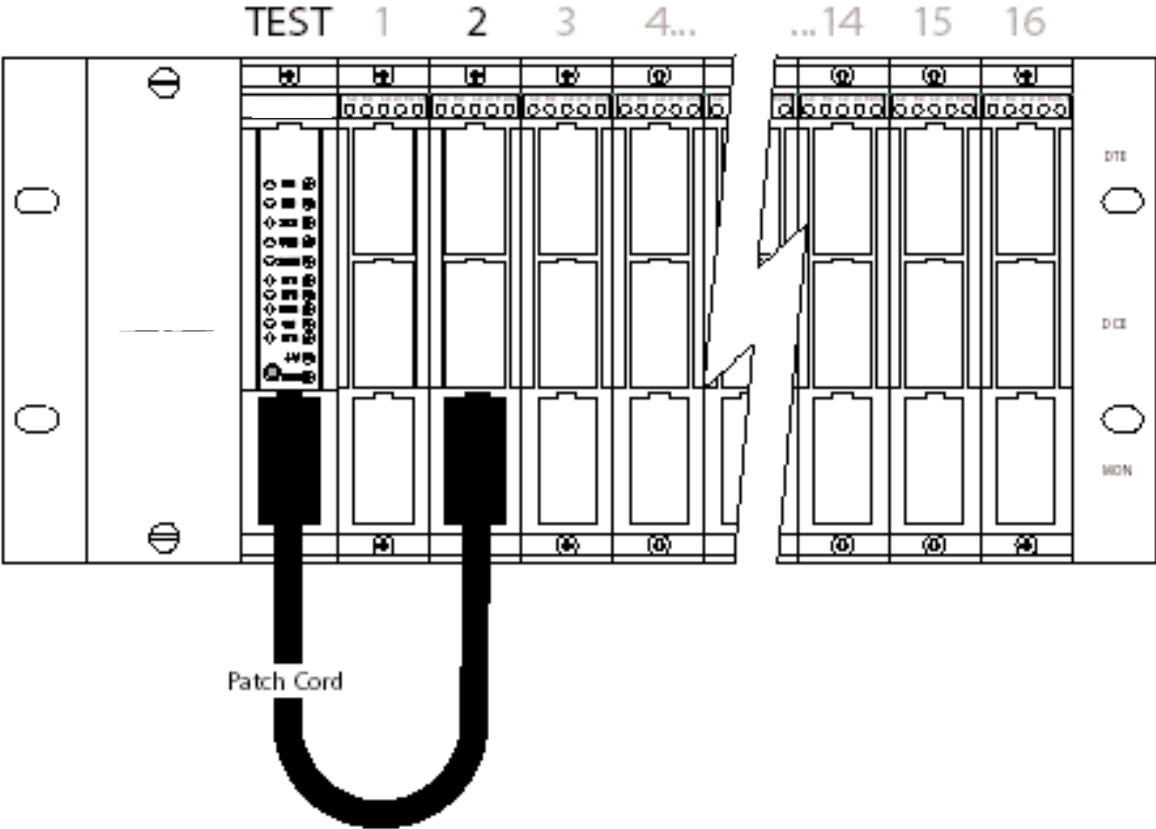


Figure 6-1. Patch-cord connection.

RS-232 AND V.35 STANDARD PATCH PANELS

DCE Signal Pathway

NOTE

The contacts connecting the DCE and DTE paths in the patch module are open.

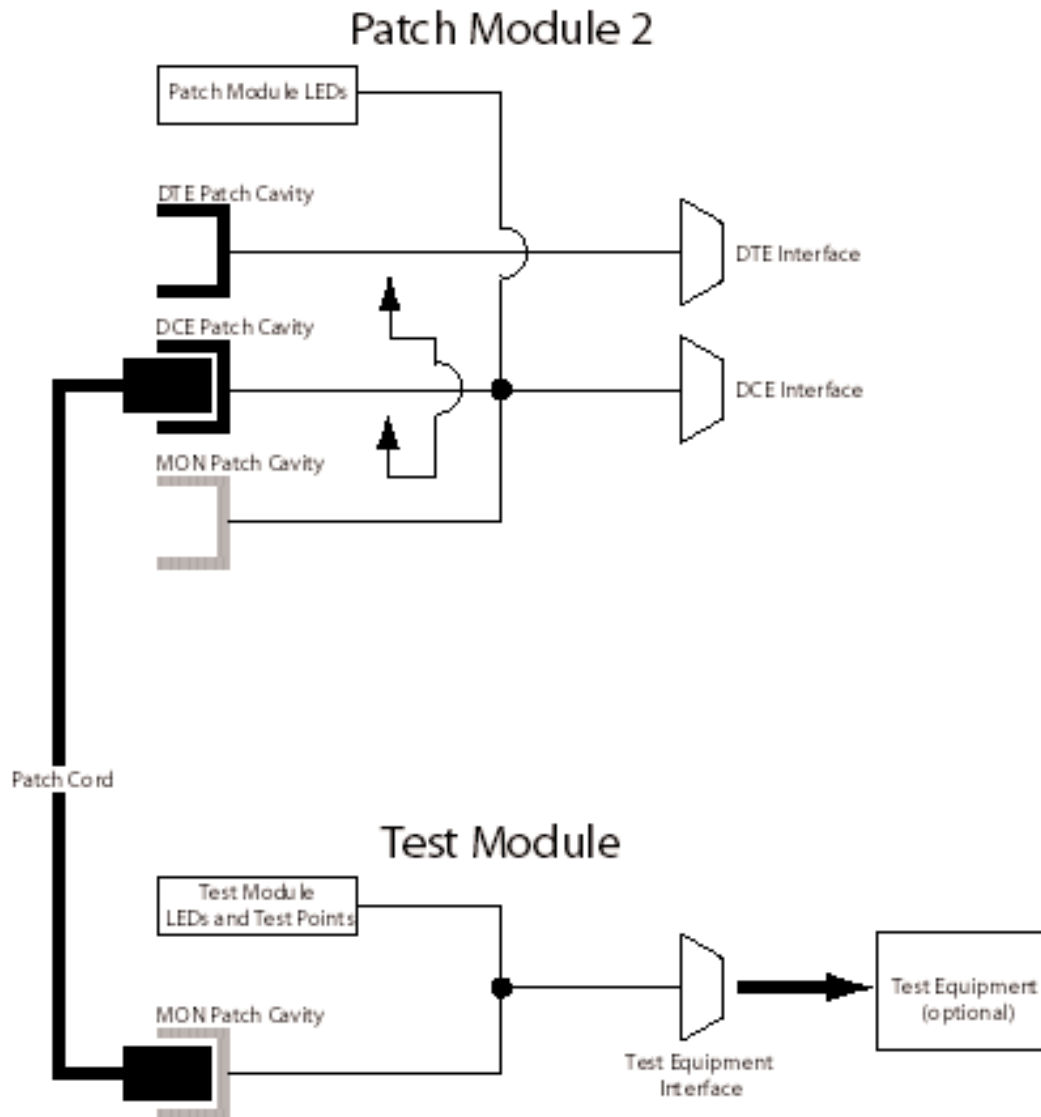


Figure 6-2. DCE signal pathway.

6.1.2 EXTERNAL TEST EQUIPMENT TO DCE

To connect an intrusive test from external test equipment to a patch module's DCE:

1. Connect one end of a test patch cord to the patch module's DCE patch cavity.
2. Connect the opposite end of the same test patch cord to the external test equipment (see Figure 6-3).

Example of Monitoring from a Test Module

In this example, the external test equipment is connected, via a patch cord, to patch module 2's DCE patch cavity. This permits the interactive testing of signals passing through patch module 2's DCE.

Patch-Cord Connection

Shown below is the test patch cord connected to the external test equipment and the patch module 2 DCE patch cavity.

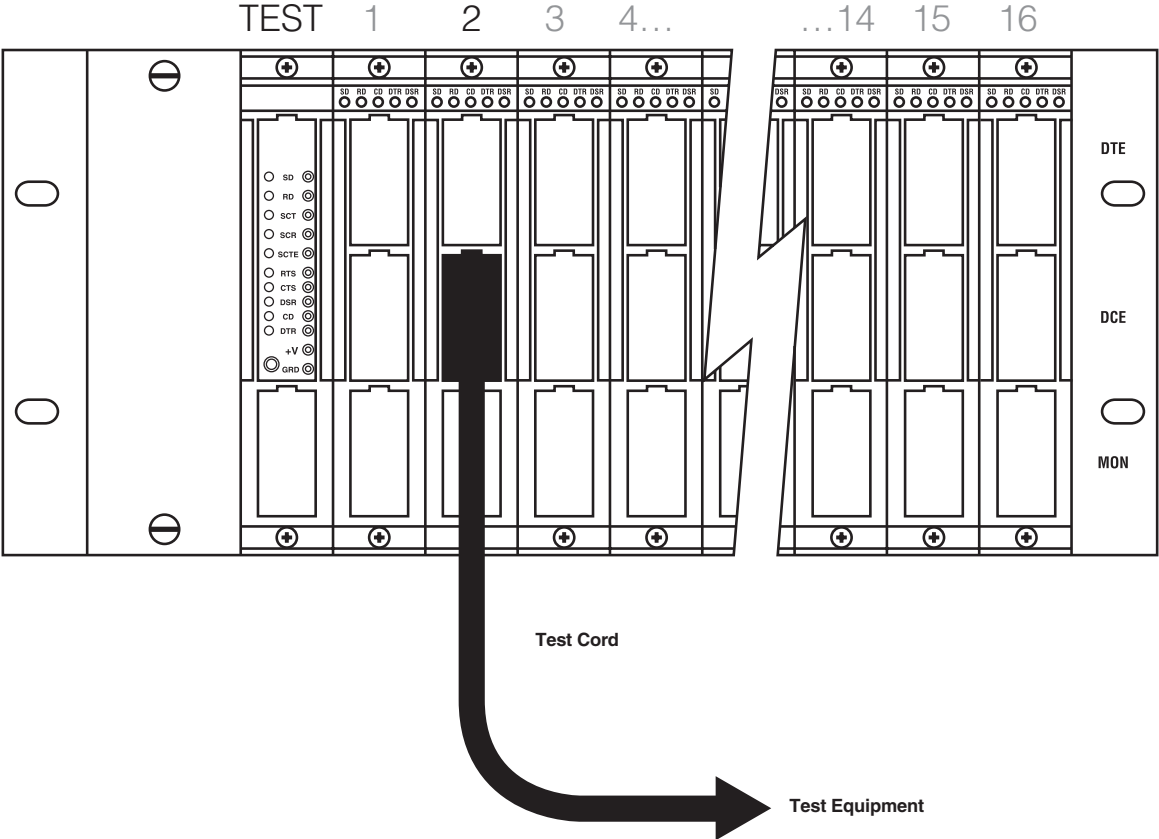


Figure 6-3. Patch-cord connection.

RS-232 AND V.35 STANDARD PATCH PANELS

DCE Signal Pathway

NOTE

The contacts connecting the DCE and the DTE pathways in the patch module are open.

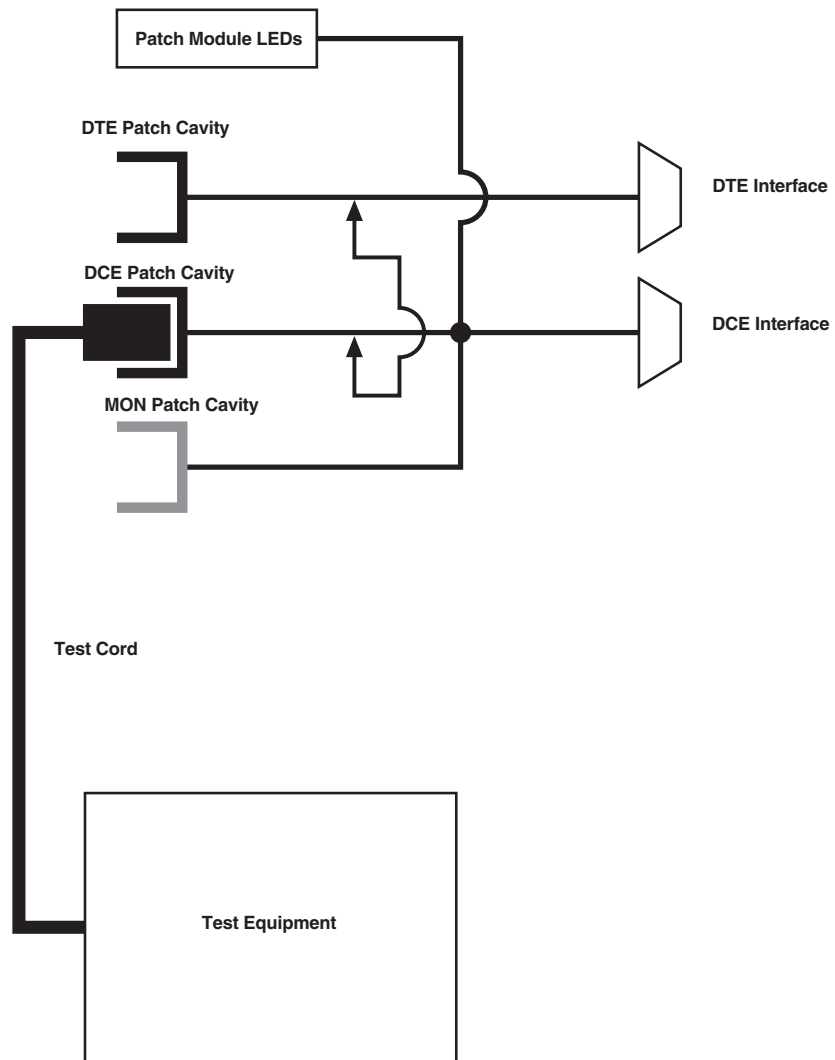


Figure 6-4. DCE signal pathway.

6.2 Intrusive Testing to a Patch Module DTE

During an intrusive test to a patch module DTE, you can monitor the patch module's DCE signals through its MON patch cavity. See **Chapter 4, Monitoring** for more information. You cannot monitor the patch module's DTE signals through its MON patch cavity. The patch module's LEDs are connected to the DCE signals only. The circuits between the patch module's DCE and DTE signals are broken. Only the patch module's DTE signals are connected to the test module and/or external test equipment. Interactive testing of the DTE signals is possible using the test module and/or external test equipment.

6.2.1 TEST MODULE TO DTE

To connect an intrusive test from a test module to a patch module's DTE:

1. Connect one end of a test patch cord to the first patch module's DTE patch cavity.
2. Connect the opposite end of the same test patch cord to test module's MON patch cavity (see Figure 6-5).

Example of Intrusive Testing from a Test Module

In this example, the test module's MON patch cavity is connected, via a patch cord, to patch module 3's DTE patch cavity. This permits the interactive testing of signals passing through patch module 3's DTE.

Test Patch-Cord Connection

Shown here is the patch cord connected to the test module MON and the patch module 3's DCE patch cavities.

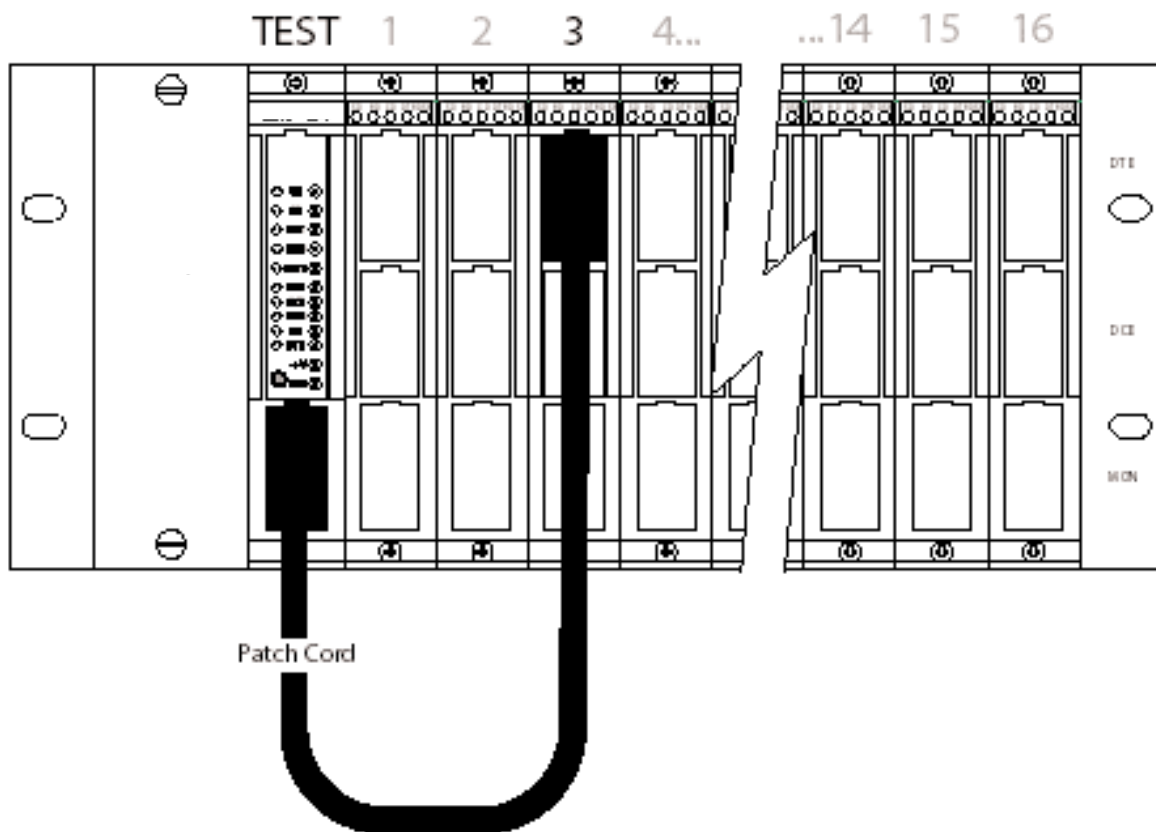


Figure 6-5. Test patch-cord connection.

RS-232 AND V.35 STANDARD PATCH PANELS

DTE Signal Pathway

NOTE

The contacts connecting the DCE and DTE pathways in the patch module are open.

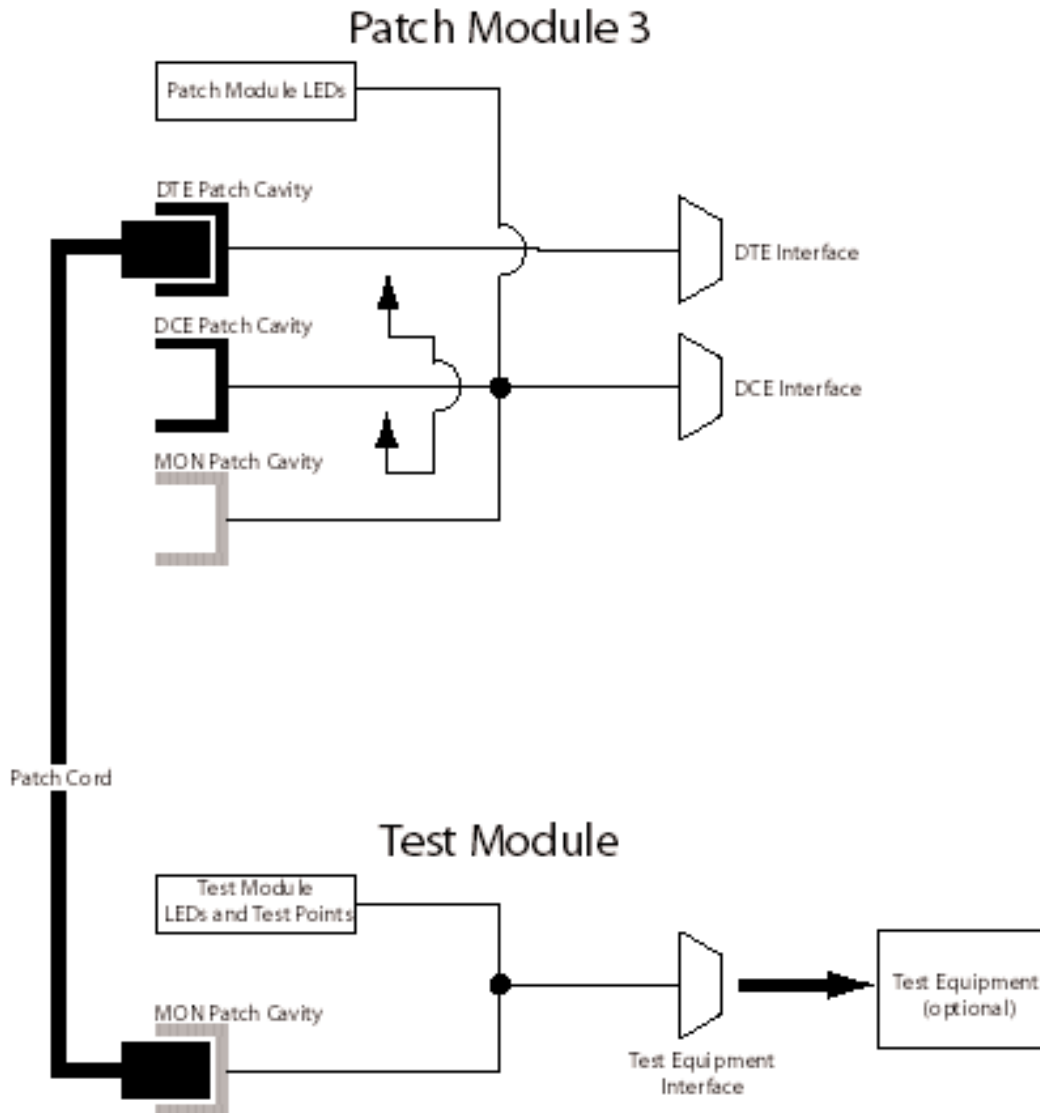


Figure 6-6. DTE signal pathway.

6.2.2 EXTERNAL TEST EQUIPMENT TO DTE

To connect an intrusive test from external test equipment to a patch module's DTE:

1. Connect one end of a test patch cord to the patch module's DTE patch cavity.
2. Connect the opposite end of the same test patch cord to the external test equipment (see Figure 6-7).

Example of Monitoring from External Test Equipment

In this example, the external test equipment is connected, via a patch cord, to patch module 2's DTE patch cavity. This permits the interactive testing of signals passing through patch module 2's DTE.

Test Patch-Cord Connection

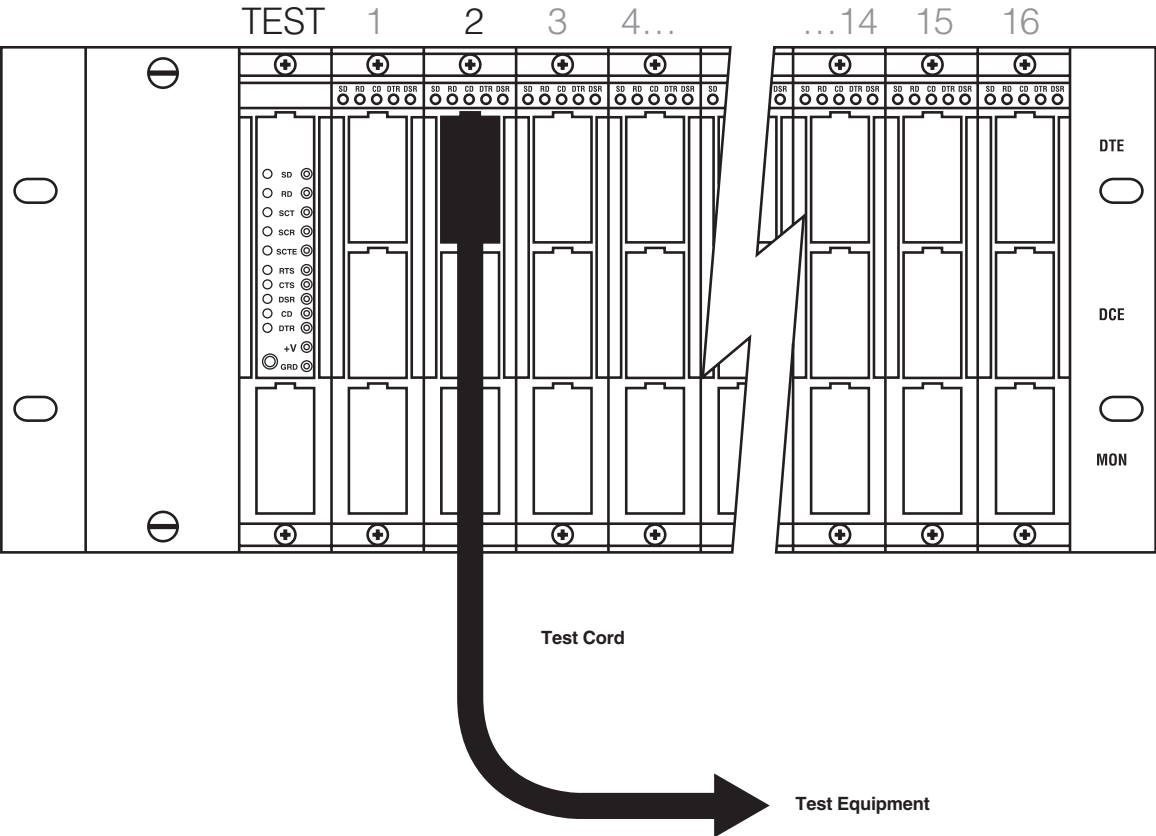


Figure 6-7. Test patch-cord connection.

RS-232 AND V.35 STANDARD PATCH PANELS

DTE Signal Pathway

NOTE

The contacts connecting the DCE and DTE pathways in the patch module are open.

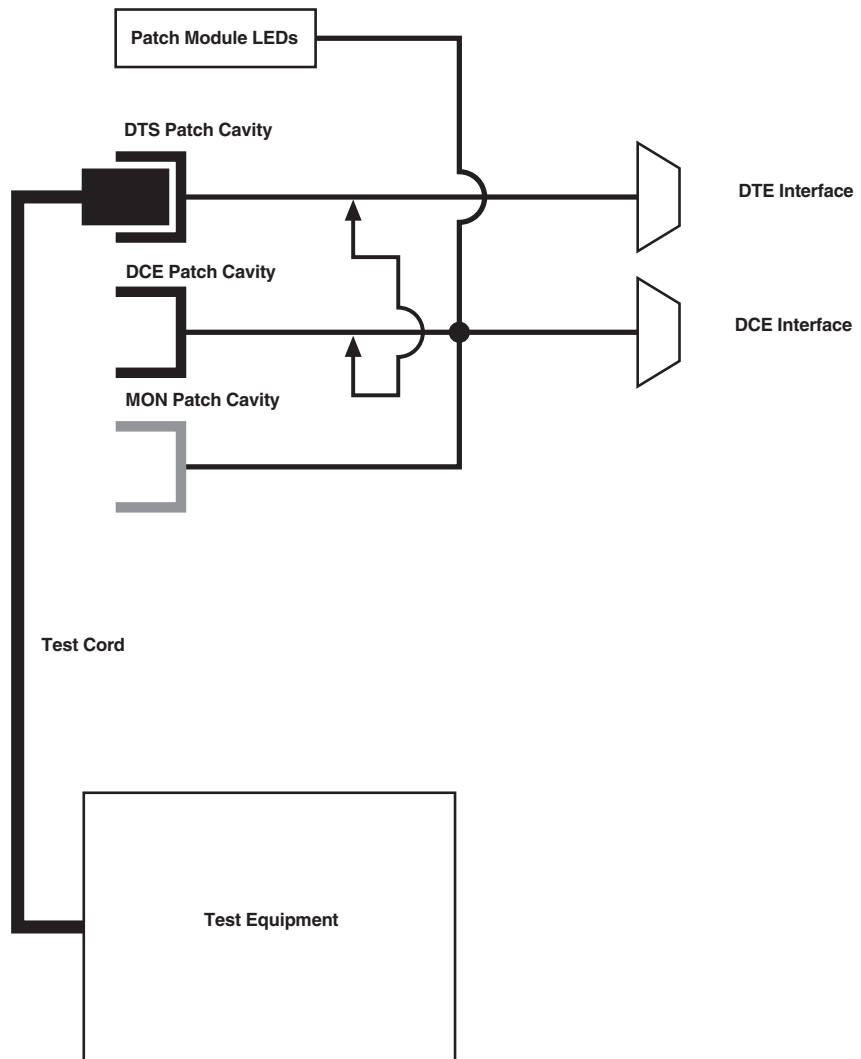


Figure 6-8. DTE signal pathway.

7. Using Test Points

You can use the test points found on the Standard Patch Panel test modules for non-interactive, non-intrusive monitoring of signals; interactive, intrusive testing of signals; or intrusive injecting of signals to test signal pathways. Each test module includes a +12-volt outlet point and a signal ground point. These let you use test points without an external test device. External test devices could include, but are not limited to, breakout boxes, oscilloscopes, and meters. Refer to the documentation provided with your testing device for more information concerning the generation and testing of signals.

8. Data Communication Interfaces

Table 8-1. Data communication interfaces

Patch Cavity	RS-232 Signal	DB25 Pin	V.35 Signal	DB25 Pin	M/34 Pin
	FG	1	FG	1	A
2	SD	2	SD(A)	2	P
3	RD	3	RD(A)	3	R
4	RTS	4	RTS	4	C
5	CTS	5	CTS	5	D
6	DSR	6	DSR	6	E
7	SG	7	SG	7	B
8	DCD	8	DCD	8	F
9		9			
10		10			
11		11	LT	18	K
12	DCD(S)	12	SCR(B)	9	X
13	CTS(S)	13	SD(B)	14	S
14	SD(S)	14	SCT(B)	12	AA
15	SCT	15	SCT(A)	15	Y
16	RD(S)	16	RD(B)	15	T
17	SCR	17	SCR(A)	17	V
18	LL	18			
19	RTS(S)	19			
20	DTR	20	DTR	20	H
21	SQ	21			
22	RI	22	RI	22	J
23	DSR	23	SCTE(B)	11	W
24	SCTE	24	SCTE(A)	24	U
25	BUSY	25			

(S) = Secondary signal
 (A),(B) = Balanced pairs

9. Troubleshooting

9.1 Calling Black Box

If you determine that your Patch Panel is malfunctioning, do not attempt to alter or repair the unit. It contains no user-serviceable parts. Contact Black Box at 724-746-5500.

Before you do, make a record of the history of the problem. We will be able to provide more efficient and accurate assistance if you have a complete description, including:

- the nature and duration of the problem.
- when the problem occurs.
- the components involved in the problem.
- any particular application that, when used, appears to create the problem or make it worse.

9.2 Shipping and Packaging

If you need to transport or ship your Patch Panel:

- Package it carefully. We recommend that you use the original container.
- If you are shipping the Patch Panel for repair, make sure you include everything that came in the original package. Before you ship, contact Black Box to get a Return Material Authorization (RMA) number.