Lucent Technologies
Bell Labs Innovations

DEFINITY®
Enterprise Communications Server
Release 7
Installation for Adjuncts and Peripherals

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You and your system manager are responsible for the security of your system, such as programming and configuring your equipment to prevent unauthorized use. The system manager is also responsible for reading all installation, instruction, and system administration documents provided with this product in order to fully understand the features that can introduce risk of toll fraud and the steps that can be taken to reduce that risk.

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Standards Compliance

The equipment in this document complies with the following standards (as appropriate): ITU-T, ECMA, ETSI, IPNS, DPNSS, National ISDN-1, National ISDN-2, ISO-9000, ANSI, FCC Part 15 and Part 68, EN55022, EN50081, EN50082, CISPR22, Australia AS3548 (AS/NZ3548), Australia AS3260, IEC 825, IEC 950, UL1459, UL 1950, CSA C222 Number 225, TS001.

Federal Communications Commission Statement

Part 15: Class A Statement

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio-frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

Part 68: Answer-Supervision Signaling

Allowing this equipment to be operated in a manner that does not provide proper answer-supervision signaling is in violation of Part 68 Rules. This equipment returns answer-supervision signals to the public switched network when:

- Answered by the called station
- Answered by the attendant
- Routed to a recorded announcement that can be administered by the CPE user

This equipment returns answer-supervision signals on all DID calls forwarded back to the public switched telephone network. Permissible exceptions are:

- A call is unanswered
- A busy tone is received

■ A reorder tone is received

Canadian Department of Communications (DOC) Interference Information

This digital apparatus does not exceed the Class A limits for radio noise emissions set out in the radio interference regulations of the Canadian Department of Communications.

Le Présent Appareil Nomérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la class A préscrites dans le reglement sur le brouillage radioélectrique édicté par le ministére des Communications du Canada.

European Union Declaration of Conformity

The "CE" mark affixed to the DEFINITY® equipment described in this book indicates that the equipment conforms to the following European Union (EU) Directives:

■ Electromagnetic Compatibility (89/336/EEC)

■ Low Voltage (73/23/EEC)

■ Telecommunications Terminal Equipment (TTE) i-CTR3 BRI and i-CTR4 PRI

For more information on standards compliance, contact your local distributor.

Table 1.   ETS standards referenced by iCTR3 and CTR4

	iCTR3	iCTR4	CTR3	CTR4
L1:	ETS300012	ETS300011	ETS300012	ETS300011
L2:	ETS300153	ETS300156	ETS300125	ETS300125
L3:	ETS300104	ETS300104	ETS300102	ETS300102
Safety:	ETS300047	ETS300046	ETS300047	ETS300046

Ordering Information

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Lucent Technologies BCS Publications Center
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909A/B Universal Coupler

1

The 909A/B Universal Coupler is used with paging and music-on-hold equipment that is not approved for use with the public network.

⇒ NOTE:
If the music source is registered by the FCC (in the USA) or an equivalent body, the 909A/B is not required.

Figure 1 shows a typical 909A/B universal coupler. For additional installation and switch setting information, refer to *909A/909B Universal Coupler Installation Instructions*.
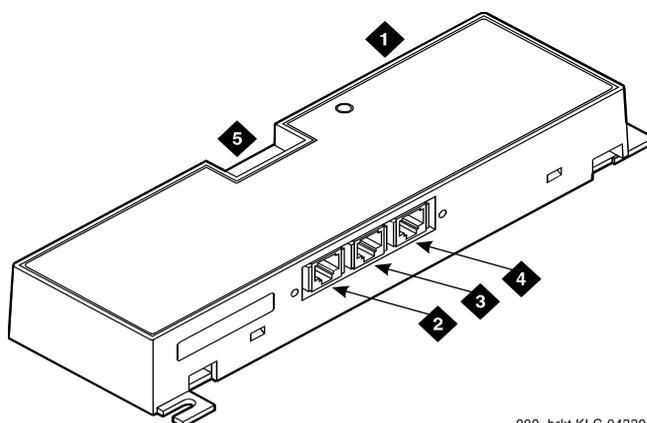
909_brkt KLC 042296

1. 909A/B universal coupler   4. J3 7-Pin modular jack

2. J1 8-Pin modular jack   5. DIP switch location

3. J2 8-Pin modular jack

Figure 1.   Typical 909A/B Universal Coupler

The 909A is the DC version of the coupler, and cabinet power supplies -48 VDC power. The 909B is the AC-powered version and power is supplied from a separate power supply (such as the KS-22911L2).

The DIP switches on the unit set:

■ Protection/Paging selection — For AUX trunk paging and malicious call trace, set to C2. Set the switch to C1 for all other applications.

■ Output attenuation (-9 or -15 dBm) — Setting depends on output level of music source.

■ Output impedance (8, 1.5k, and 50k Ohms) —This switch only requires setting if the Protection/Paging switch is set to C2 and the coupler is supplying background music to a customer-supplied paging amplifier.

The pinouts for J1, J2, and J3 are provided in Table 1, Table 2, and Table 3. Refer to these tables when connecting music or paging equipment.

Table 1.   J1 Pin Assignments (System Connections)

Pin	Color	Designation	Description
1	White-Orange	—	Not Used
2	Orange	PG2/BZ2	Seizure control lead, connected to -48 VDC from the system or from the 909A/B when the protection paging switch is set to C2, or to -48 VDC on the 909A/B when protection/paging switch is set to C1
3	White-Green	PG1/BZ1	Seizure control lead, connected to SZ lead from the AUX trunk when the protection/paging switch is set to C2, or to -48 VDC on the 909A/B when the protection/paging switch is set to C1
4	Blue	R	Ring lead
5	White-Blue	T	Tip lead
7	Green	BSY2/BY2	Busy/busy-out lead, connected to S1 lead from the AUX trunk
7	White-Brown	BSY1/BY1	Busy/busy-out lead, connected to S lead from the AUX trunk
8	Brown	—	Not Used

Table 2.   J2 Pin Assignments (Accessory Connections)

Pin	Color	Designation	Description
1	White-Orange	CMS1/M1	Customer-supplied music source
2	Orange	CMS2/M2	Customer-supplied music source
3	White-Green	COS1	Remote busy-out control contact closure from music source
4	Blue	CR	Customer ring lead
5	White-Blue	CT	Customer tip lead
7	Green	COS2	Remote busy-out control contact closure from music source
7	White-Brown	CBS1/C1	Seizure indication provided to music source
8	Brown	CBS2/C2	Seizure indication provided to music source

> ⚠ **CAUTION:**
> *Damage to the 909A/B may occur if the cable is plugged into J3 **before** all cross-connects are completed.*

Table 3.   J3 Pin Assignments (Power Connections)

Pin	Color	Designation	Description
1, 3, 4, & 7	—	—	Not used
2	Black	GRD	-48 RET or ground lead from system or from positive lead of power supply
5	Yellow	-48 VDC	-48 VDC from system or from negative lead of power supply

shows the physical locations of the pins for J1, J2, and J3.
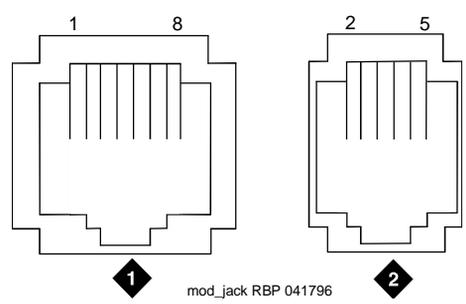
1. J1 and J2 8-Pin modular jacks   2. J3 7-Pin modular jack

Figure 2.   Typical Modular Jack Pinout

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Do you need a local, auxiliary power supply? 5

Auxiliary Power Supplies

2

Nonessential features of the attendant console, such as the optional 27B1 selector console, and DCP terminals derive their power from an auxiliary power source. One console can connect to R7csi, and 3 consoles can connect to each cabinet stack or R7r. Each cabinet can derive auxiliary power from the system and through the auxiliary cable located in the trunk/auxiliary field. Auxiliary power for a primary attendant console should be provided through this cable so the console remains fully operational during short power outages.

Do you need a local, auxiliary power supply?

Consoles can use either local or phantom power, depending on the distance between the console and the DEFINITY ECS cabinet. Over short distances, phantom power is attractive, because no additional hardware is necessary—power is supplied via the telephone circuit itself. For longer distances, you need a local power supply. Table 4 shows cabling distances for the 302C-1 console.

Table 4. 302C-1 Attendant Console Cabling Distances

	24 AWG Wire (0.27 mm^2)		27 AWG Wire (0.14 mm^2)	
	Feet	**Meters**	**Feet**	**Meters**
With selector console:				
Phantom-powered	800	244	500	152
Locally powered	5000	1524	3400	1037
Without selector console:				
Phantom powered	1400	427	900	274
Locally powered	5000	1524	3400	1037

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Applications that require auxiliary power

Auxiliary power (local or bulk) is always required for the following:

- Any 8520 terminal

- Attendant console 302C1

- PassageWay adapter interface

- Any 7500-series terminal whether in passive bus, or point to point (one per BRI port)

- Any 7500- or 8500-series terminal with an asynchronous data module

- Any 8510 terminal in passive bus or with an asynchronous data module (unless the 8510 will not be used to support data or video)

- Any 7400-series terminal with XM24 expansion module

- Any 7400-series terminal with adjuncts 7407, 74 34 or 7444

- Any 8400-series terminal with adjuncts 8411 or 8434

The 1145B is required for all installations outside the United States.

Sources of auxiliary, local power

An attendant console can derive auxiliary power from:

- 1151A1 or 1151A2 power supply

- 258A-type adapter

- A bulk power supply, such as the 1145B

    A console's maximum distance from its 1145B auxiliary power source is 800 feet (244 m) for a 302A1 or 350 feet (107 m) for a 301B1 and 302C1.

Required Safety Precautions

⚠ DANGER:

When operating power-supply equipment, you must follow basic safety precautions to reduce the risk of fire, electric shock and personal injury. Read and understand all instructions. Follow all warnings and instructions marked on the products. Follow all the installation instructions when mounting the product.

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⚠ DANGER:

Never use a power unit with a power source other than that specified on the product labels.

The power unit is equipped with a three wire grounding type plug, a plug having a third (grounding) pin. This plug will only fit into a grounding type power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact an electrician to replace the outlet. Do not defeat the safety purpose of the grounding type plug.

Do not attach the power supply cord to building surfaces.

Do not overload power outlets.

Do not use this product near water. Do not let anything spill on or into the unit. Clean only with a dry rag.

Never push objects through openings in the case.

Do not try to disassemble the unit. Return it for repair. Opening or removing covers may expose you to dangerous voltages. Incorrect reassembly may cause electric shock when the products are subsequently used.

Power down the unit and refer servicing immediately if the unit is exposed to water or other liquids, if the unit is dropped or damaged, or if the unit fails to operate normally.

⚠ DANGER:

Never let the operating temperature of the unit exceed the recommended maximum.
Do not block or cover the ventilation openings in the case.
Do not let anything rest on the unit.

⚠ DANGER:

Do not attempt to recharge batteries. The power unit recharges the batteries itself. Any other recharging method may cause leaks of corrosive electrolyte or explosion. Discard discharged batteries as soon as possible. Discharged batteries are more likely to leak.

Do not store batteries in high temperature areas. Batteries stored in a cold environment should be protected from condensation during storage and warming. Batteries should be stabilized at room temperature prior to use after cold storage. Do not install batteries if the manufacturing date on the label indicates that the batteries are more than six months old.

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1145B Power Supply

The 1145B power supply powers ISDN/DCP, terminal equipment, adjuncts, and other customer-supplied external equipment. It supplies -48V, 200 Watts total and supports 32 outputs. You can install one ISDN terminal or DCP adjunct per output.

A manual switch on the distribution unit lets the user redirect reserve power to outputs 1 to 32 so that all outputs get battery reserve power.

An optional 1149 battery and 1145B distribution unit provides uninterruptible -48 VDC power.

⚠ DANGER:

When operating power-supply equipment, you must follow basic safety precautions to reduce the risk of fire, electric shock and personal injury. Read, understand, and follow all warnings and instructions. See "Required Safety Precautions" on page 6.

Circuit protection

A thermistor current-limits the maximum output of each output to 12 Watts, but the average power per output cannot exceed 7.25 Watts (200/32 = 7.25). An LED indicates the status of the thermistor. When the LED is ON, there is a short on the power pair.

Mountings

The back-up battery mounts on a top plate. The power supply and distribution units mount on a bottom plate. The plates are normally wall-mounted.

Installing the Wall Mounting

See Figure 3 on page 9, "1145B/1147B Mounting Arrangement."

1. Locate one plate directly below the other with the raised letters right side up. Be sure that the AC power cord can reach the electrical outlet from the bottom plate. The power cord is about 7.5 ft. (2 m) long.

   ### ⇒ NOTE:
   Up to 4 power supplies can draw current from one 110- or 230-VAC, 20- or 15-Amp feeder. Use only unswitched receptacles that are not shared with other equipment.

2. Secure the wall mounting plates to a 3/4-in. (2-cm) plywood mounting board using the four 1/2-in. #10 wood screws supplied with the plates.

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3. Snap the 1145B power supply onto the bottom wall-mounting plate (no tools are needed).

4. Connect an insulated 17-AWG #12 (1.2-mm) ground wire (or better) between the ground lug on the power-supply frame and an approved ground.

    The frame ground screw is located next to the AC receptacle, to the left of the unit.
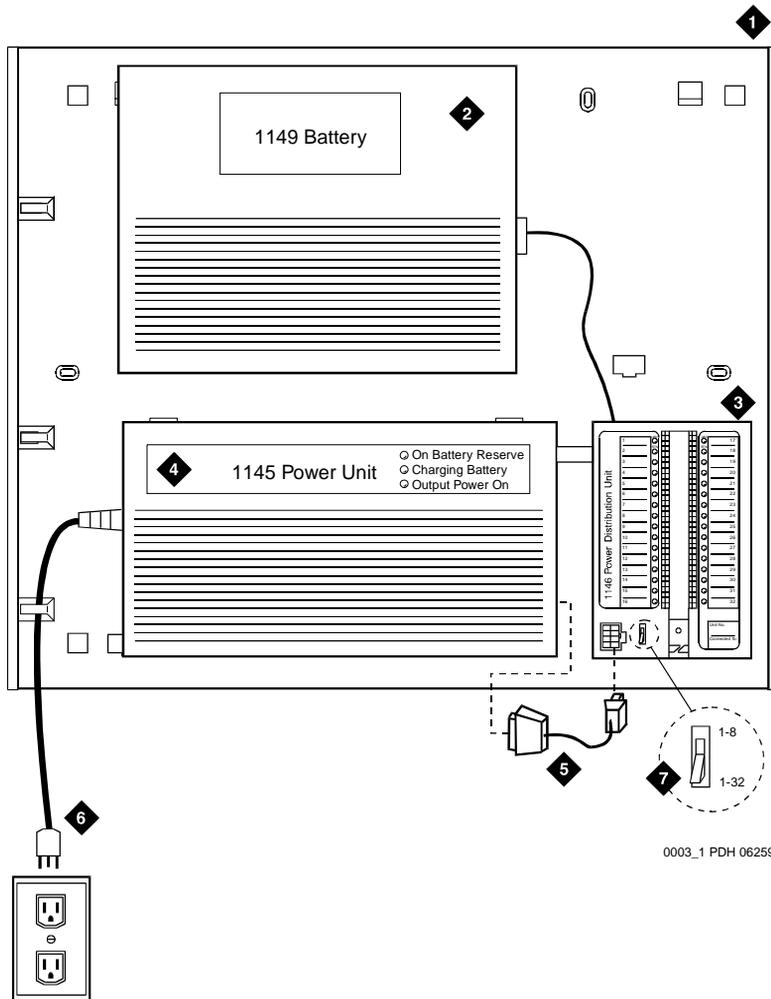
1. Wall mounting plate
2. Optional battery (1149B shown)
3. 1147B power distribution unit
4. 1145B power unit

5. Power cable
6. Unswitched outlet (120 VAC, 20 A or 230 VAC, 15 A)
7. Battery backup switch setting

Figure 3.   1145B/1147B Mounting Arrangement

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5. Write the Unit Number and connectivity information on the front label, next to the LEDs.

Installing the 1147B Power Distribution Unit

1. Insert and securely tighten the two supplied #8-32 x 1/2-inch shoulder screws (they have an unthreaded section at the top) into the top holes designated for 1147B Power Distribution Unit on the bottom plate. Mount the unit on these two shoulder screws, using the key holes on the back of the unit.

2. Secure the unit by inserting the #8-32 x 1 inch screw through the bottom of the unit (just above the wire clips) into the plate and tighten.

3. Set the battery back-up switch option to the 1-32 (down) position to provide battery back-up to all outputs.

4. Connect the power distribution unit to the power supply with the power cable. Refer to the power supply's right-side label to locate the output power connection.

Installing and Wiring the Battery

Three types of back-up batteries can be used:

Table 5. Back-Up Batteries

Battery	Rating
1148B	2.5 Ah
1149B	5 Ah
1147B	8 Ah

To install the battery, proceed as follows.

1. Loosely insert two #10-32 x 1/2-inch shoulder screws in the battery-mounting holes at the top of the wall mounting plate.

2. Place the keyhole slots in the battery bracket on these two screws. Make sure the label on the battery is visible.

   The battery cord exits from the right side of the bracket.

3. Tighten the screws securely.

4. Plug the battery cord into the right rear receptacle on the power supply. The right-side label indicates the rear receptacle.

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Installing the Expanded Power Distribution Unit

You can install a second power-distribution unit for additional 8400- and 8500-series terminals.

⚠ CAUTION:

Total power cannot exceed 200 watts. Consult the chart below for permissible terminal installations.

Table 6.   Permissible terminal installations (total power < 200 W)

Terminal mix	Maximum numbers	Notes
7500-series + 8500-series ISDN	24 + 24	
7400-series + 8400-series DCP	24 + 24	
8400-series DCP	74	
7400-series DCP	74	Average power per terminal must be less than 3.126 W

Each expanded power distribution unit kit supplies the following items:

- One power distribution unit
- One T-cable
- Two #8-32 x 1/2-inch shoulder screws
- One #8-32 x 1 inch screw
- One spacer bracket

Refer to Figure 4 while installing the power distribution unit:

1. Fasten the spacer bracket to the mounting plate with the #8-32 x 1/2-inch shoulder screws.

   The spacer bracket is not shown in the figure. It is behind the top power distribution unit.

2. Slide the keyhole slots in the power distribution unit over the shoulder screws.

3. Insert the #8-32 x 1 inch screw through the distribution unit, through the spacer bracket, and into the plate. Tighten the screw.

   The mounting hole is located just above the wire clip.

4. Set the battery back-up switch to the 1-32 (down) position.

5. Power-down the 1145B as described on the label on the side of the unit.

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6. Remove the output power cable between the 1145B and the 1147B units. The cable will not be reused.

7. Connect the P1 connector end of the T-cable to the bottom power distribution unit.

8. Connect the P2 connector to the top distribution unit.

9. Connect the P3 connector to the 1145B.

10. Power-up the 1145B as described on the label on the side of the unit.

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1. Wall-mounting plate

2. Optional 1147B power distribution unit

3. T cable (H700-347-G7)

4. Standard 1147B power distribution unit

5. 1145B power unit

Figure 4.   Expanded Power Distribution Unit

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Powering Up and Testing AC and DC Power

When you power up the unit or interrupt power to a unit, the unit runs an AC or DC self test. LEDs on the front panel indicate the status of the power supply. The following table lists the LEDs.

Table 7.   Power-supply LEDs

LED Color	Meaning
GREEN	Power supply is providing power
YELLOW	Battery is charging (after at most 20 hours, when the battery has reached full charge, the YELLOW LED should go out)
RED	Power supply is on battery reserve

1. Connect the AC power cord to the power supply, and route the cord to an appropriate AC outlet using the clips provided on the unit.

   ⇒ **NOTE:**
   A maximum of four power supplies can be powered from one dedicated 110 VAC, 20-amp feeder. Use only unswitched receptacles.

2. Start the AC test by plugging the cord into the outlet.

   This powers up the power supply.

3. Check AC operation of the 1145B power supply by monitoring the LEDs:

   PASS: GREEN and YELLOW are both lit.

   FAIL: either GREEN or YELLOW LED is not lit.

4. If the AC test failed, test the AC outlet, power cord, and connections.

5. If the AC test failed, but power is available and the AC power cord and connections are good, replace the power unit.

6. Once the AC test passes, activate the DC battery-backup supply by disconnecting the AC plug.

7. Check DC (battery back-up) operation by monitoring the LEDs.

   PASS: RED and GREEN are both lit.

   FAIL: either RED or GREEN is not lit.

8. If the DC test fails, check the connections.

9. If the DC test fails but the connections are good, replace the batteries and retest.

10. If the DC test fails after you replace the batteries, replace the power supply.

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11. Once the DC test passes, reconnect AC power to the power supply.

Wire the 1147B Power Distribution Unit

Wire endpoints to the 1147B while power from the 1145B is on.

1. Install cross-connect jumpers (the label shows polarity) to Pins 7 and 8 of the appropriate information outlet. Route the wires through the clip provided on the unit. If a red LED is on, see *"Repairing Short Circuits and Resetting Red LEDs" on page 16*. Figure 5 shows the connections.

    A red LED lights if the associated circuit is connected to shorted wiring or a shorted terminal.

1. Power supply kit	6. Circuits 17-32	11. AC input
2. 2.5, 5.0, or 8.0 A hour battery	7. Port circuit	12. Ground wire
3. 1147B distribution unit	8. Main distribution frame	13. ISDN/ display system protocol terminal
4. 1145B power supply	9. Modular cord	
5. Circuits 1-17	10. Pins 7 and 8 (display terminal power)	14. Circuits 1-32
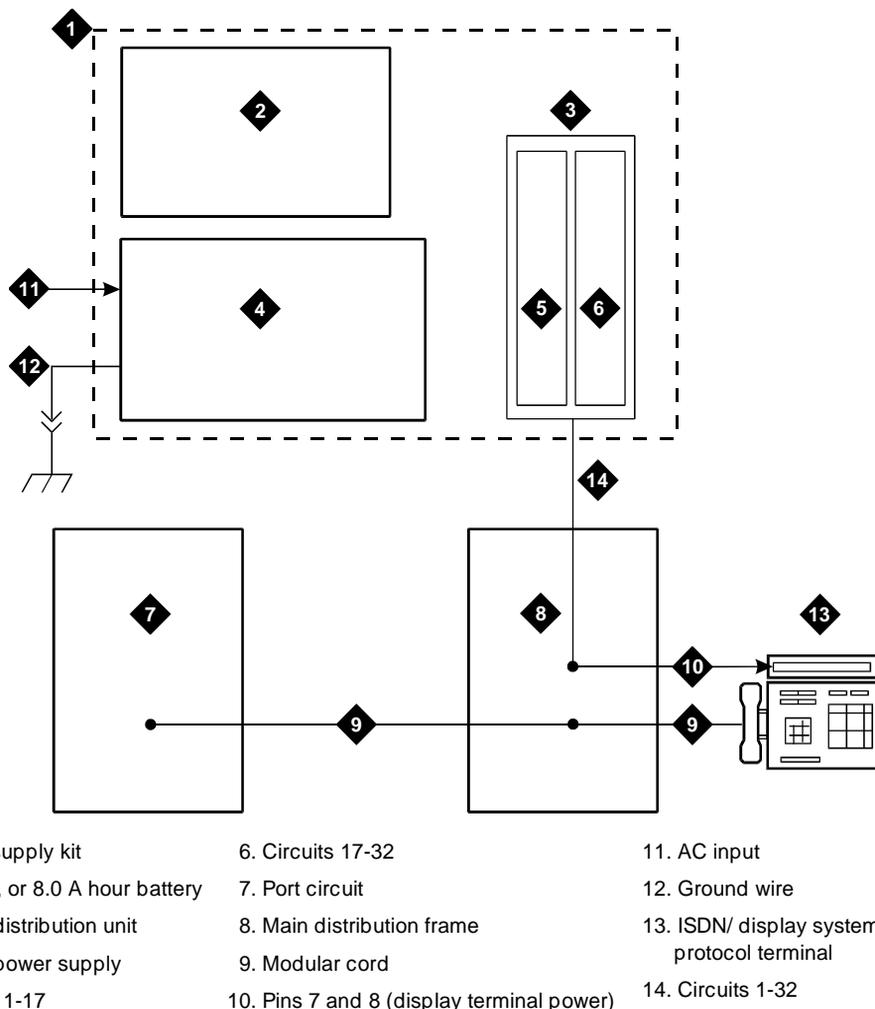
Figure 5.   Typical wiring to a terminal

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2. Mark lead destinations, unit number, and connectivity information on the label next to each connector.

Replacing the Batteries

To maintain back-up protection and battery reliability:

1. Replace batteries every four years.

Storing the Batteries in Inactive Units

To prevent leakage when the power unit is not in use for several months or more:

1. Remove the batteries, and store them separately.

Repairing Short Circuits and Resetting Red LEDs

A red LED next to any of the 32 power output connectors indicates a short circuit in the building wiring or the terminal equipment. To reset the LED:

1. Disconnect the terminal equipment from the wall jack.

2. If the LED goes off, the terminal equipment is faulty. Replace it.

3. If the LED is still lit, find and repair the short circuit in the building wiring.

4. Reconnect the terminal equipment to the wall jack, and re-test.

1151A and 1151A2 Power Supplies

The 1151A is a standard (no battery backup) power supply unit. The 1151A2 is a battery backup version of the 1151A. Either power supply can support one telephone with or without an adjunct.

The 1151A and 1151A2 power supplies can supply local power to ISDN-T 7400-, 7500-, 8400-, and 8500-series voice terminals connected to a system, and to the DCP 7444 voice terminal or 302C attendant console that need auxiliary power for its display. The unit can supply power to adjunct equipment such as S201A and CS201A speakerphones, or a 500A headset adapter attached to any currently manufactured analog, DCP, or ISDN-T voice terminal equipped with an adjunct jack.

The power supply has a single output of -48 VDC, 0.4 A, and can operate from either a 120 VAC 70 Hz power source (105 to 129 VAC) or a 220/230/240 VAC 50 Hz power source (198 to 274 VAC). Input voltage selection is automatic. The output capacity is 19.2 Watts. The maximum loop range is 250 feet (77 meters), and power supplies use 2 modular jacks. PHONE jack pins 7 and 8 (- and +, respectively) provide power.

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The PHONE and LINE jacks are 8-pin female non-keyed 757-type jacks that can accept D4, D7, and D8 modular plug cables. Figure 6 shows a 1151A power supply. The 1151A2 looks similar.

⚠ DANGER:

When operating power-supply equipment, you must follow basic safety precautions to reduce the risk of fire, electric shock and personal injury. Read, understand, and follow all warnings and instructions. See "Required Safety Precautions" on page 6.

⚠ CAUTION:

Do not locate the unit within 7 inches (15.25 cm) of the floor.

⚠ CAUTION:

*Use the power supply **only** with telecommunications equipment, indoors, and in a controlled environment.*
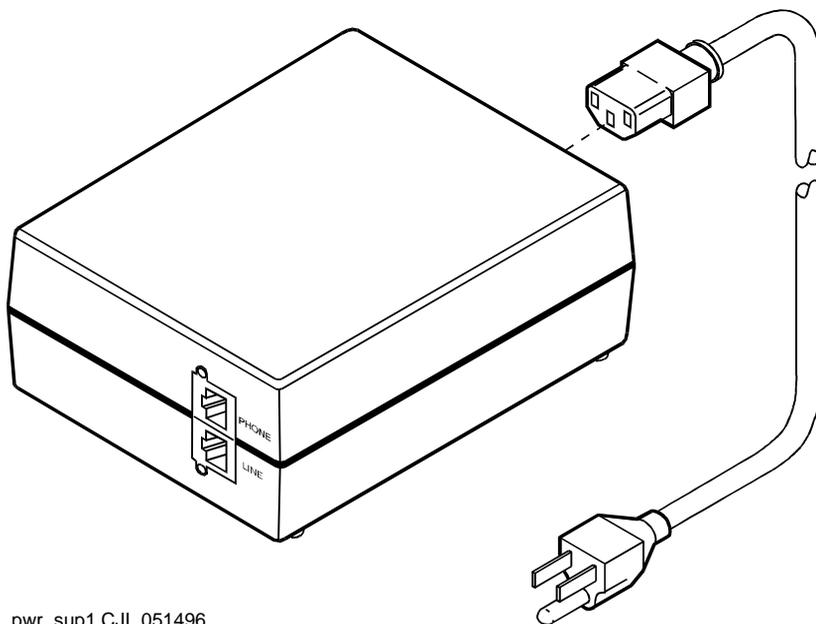
pwr_sup1 CJL 051496

Figure 6.   Typical 1151A Power Supply (Front)

Desk Mounting

1. Place the power supply on a flat surface such as a desk.

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    1151A and 1151A2 Power Supplies   *18*

Wall Mounting

1. For wall-mounting, use the keyhole slots on the bottom of the chassis.

Standards compliance

The 1151A and 1151A2 power supplies comply with the UL Standard UL 1459, second edition.

Table 8.   Standards compliance

Complies	UL 1459
Certified	CSA 22.2
Approved	EN7950
Approved	CE

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3 Voice and Data Terminals and Extenders
Two-Wire DCP Endpoint   19

Voice and Data Terminals and Extenders

3

Two-Wire DCP Endpoint

Wire the tip and ring connections of two-wire DCP endpoints to a TN2224 digital line 2-wire circuit pack (or equivalent) similar to the two-wire analog endpoints for a TN747B analog line circuit pack.

⟹ NOTE:
The TN2224 supports 2-wire DCP sets only (not 4-wire).

Two-wire Voice Terminals

⚠ CAUTION:
*Except for auxiliary power, if necessary, these should be the **only** connections to the modular wall jack. Do not bridge or parallel these telephones.*

Table 9.   Pin-out for Two-wire Voice Terminals

Pin Number	Function	Pin Number	Function
1	4-wire output from terminal	5	2-wire ring
2	4-wire output from terminal	7	4-wire input from system
3	4-wire input from system	7	Auxiliary power -48 VDC
4	2-wire tip	8	Auxiliary power GRD

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Two-Wire DCP Endpoint

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Two-Wire Voice and Data Terminals

Table 10.   Pin-out for Two-wire Voice Terminals

Pin Number	Function	Pin Number	Function
1	4-wire output from terminal	5	2-wire ring
2	4-wire output from terminal	7	4-wire input from system
3	4-wire input from system	7	Auxiliary power -48 VDC
4	2-wire tip	8	Auxiliary power GRD

Figure 7 shows a workstation connecting to a data adapter. The line side of the adapter connects to the TN2181 digital line 2-wire circuit pack via the main distribution frame (MDF) (to the system cabinet).

itdata RBP 032896
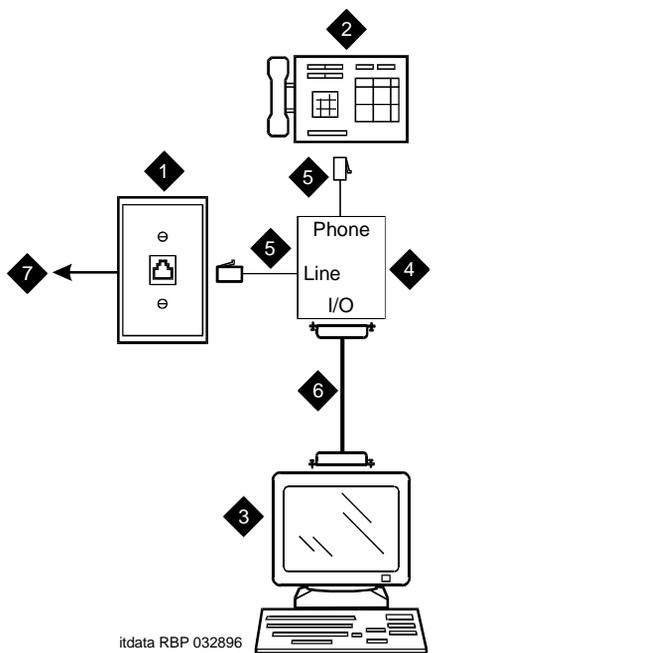
1. 103A or modular wall jack	5. 4-wire modular cord
2. 2-wire endpoint	6. 25-pair cable
3. Data terminal (serial data)	7. To TN2181 digital line circuit pack
4. Data adapter (such as Italtel)	

Figure 7.   Typical Connections to a Two-Wire DCP Workstation

Wire the circuit pack to the MDF with a 25-pair cable:

1. Wire to the data adapter per local standards.

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DEFINITY DCP Extender, Stand Alone

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2. Wire the data terminal and telephone as instructed in the document accompanying the data adapter.

DEFINITY DCP Extender, Stand Alone

The figure below shows a typical connection from a digital line 2-wire DCP circuit pack through two DCP extender devices. See Appendix A, "Connector and Cable Pinout Charts" for cabling information and pin assignments.
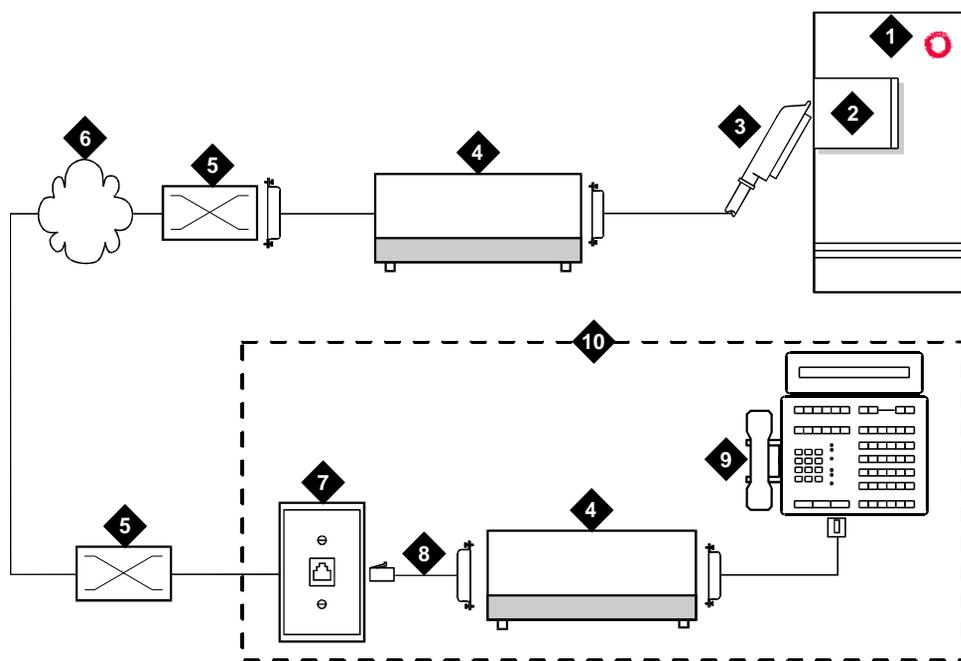
1. System cabinet	6. Public switched telephone network (PSTN)
2. TN2181 or TN2224 circuit pack	7. 103A or modular wall jack
3. 25-pair cable	8. Modular line cord
4. DEFINITY DCP extender	9. DCP telephone (Such as 8410D, 8405, or 8434)
5. Main distribution frame (MDF)	10. Remote work location

Figure 8.   Typical DEFINITY DCP Extender Connections

DEFINITY DCP Extender, Rack Mount

Figure 9 shows a typical rack mount (multi-mount) DCP extender. Connections from either a digital line 17-port 2-wire DCP circuit pack or a digital line 24-port 2-wire DCP circuit pack, are made through two DCP extender devices. The stand alone extender installs at the work location. To install the stand-alone unit, refer to the installation instructions in "DEFINITY DCP Extender, Stand Alone" earlier in

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DEFINITY DCP Extender, Rack Mount

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this chapter. Refer to Appendix A, Table 43, "DCP Extender 25-Pair Cable Pinout". The *DEFINITY Extender Switch Module System Administrator's Guide* contains additional information.

h2dferm PDH 100796

1. Front of rack mount assembly

2. First circuit pack in slot 1 ("A")

3. Slot 12 ("L")

4. Rear of rack mount assembly

5. 25-pair connector to the MDF and the digital line circuit packs

6. Power connector
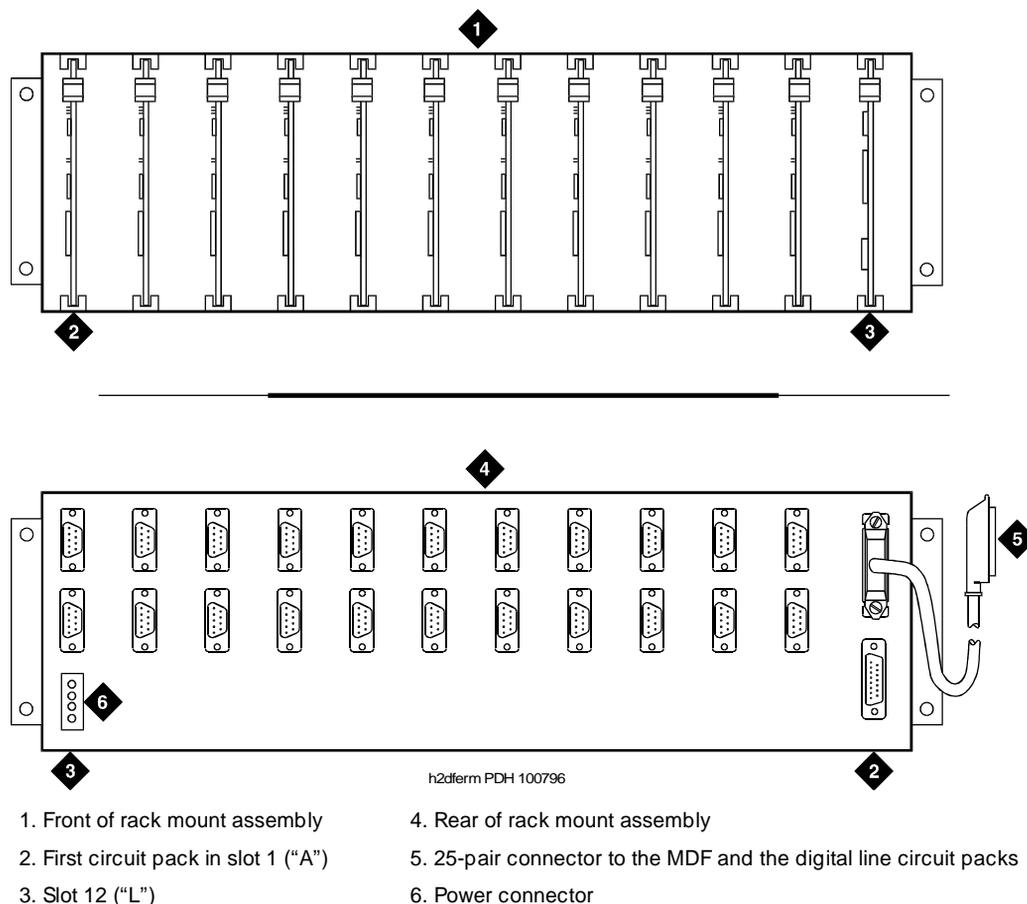
Figure 9.   Typical DEFINITY DCP Extender Connections

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4   Data Modules and Asynchronous Data Units
About Data Modules   23

Data Modules and Asynchronous Data Units

4

About Data Modules

Data modules connect peripheral equipment to the G3V4 and convert between the RS-232 communications protocol used by peripherals and the DEFINITY Digital Communications Protocol (DCP). Possible peripherals include AUDIX adjunct equipment and terminals, serial printers, customer-supplied terminals and host computers, call detail-recording (CDR) devices, and pooled modems. Figure 10 shows typical data-module connections.

Note that ISDN data modules, such as the 7500B, are not covered in this volume. Refer to *Integrated Services Digital Network (ISDN) 7500B Data Module User's Manual*, 555-021-717, for detailed procedures. ISDN data modules connects DTE and DCE equipment to the ISDN network using an RS-232 or V.35 interface and an RS-377 automatic calling unit.

Understanding RS-232 communications

To install a data module, you have to set up the device to work with RS-232 devices.

The RS-232 communications protocol defines a communications link as a DCE (Data Communications-Equipment) device and a DTE (Data Terminal Equipment) device connected by an RS-232 cable. The send and receive pins on DCE equipment (pins 2 and 3) are reversed on DTE equipment, so that the DCE transmit pin connects to the receive pin of the DTE and vice versa.

Generally, the term DCE is applied to devices that mediate between customer equipment and the carrier or network. Such devices include modems, data modules, and data units. DTE describes devices that provide a user interface for data communications, such as dumb terminals and PCs. When configured as DTE, data modules are used for asynchronous modem pooling. When configured as DCE, data modules are analogous to modems in that they link a device such as a terminal or PC (DTE) to G3V4.

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Overview of the Installation Procedure

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To install a data module correctly, you identify the connected equipment as DCE or DTE and do one of the following:

■ configure the modem for a DTE or DCE connection

■ install a null-modem converter

Detailed instructions are provided in the sections for each modem type (below).

cydfnst RPY 070397
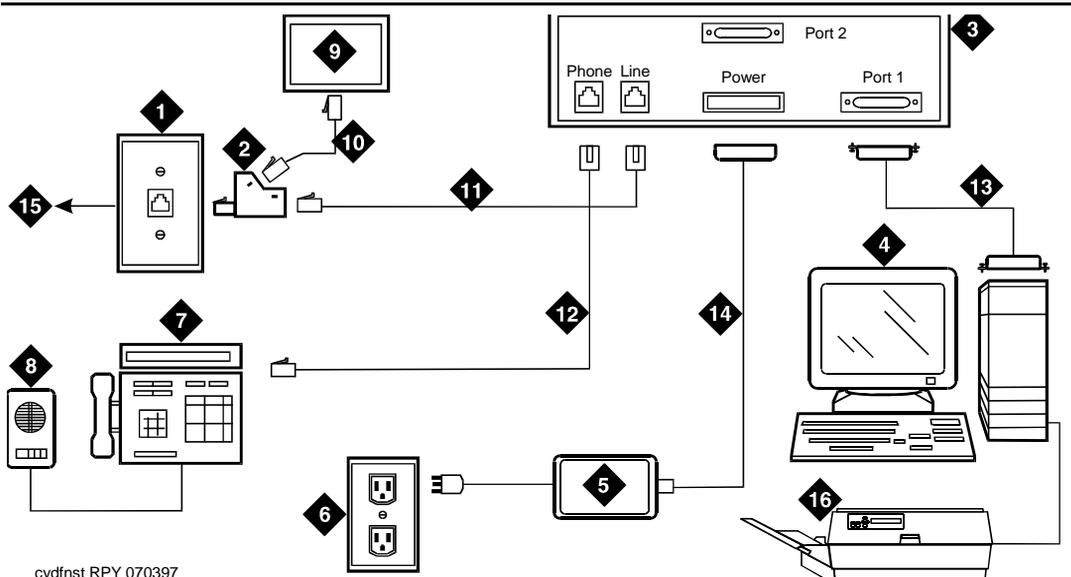
1. 103A connector or modular wall jack
2. 400B2 adapter
3. Rear of data module (7400B Shown)
4. Host computer
5. Data module power supply
6. Electrical outlet
7. Display telephone
8. S101A speakerphone
9. Auxiliary power supply for telephone
10. D7AP cord
11. D8W cord
12. Line to display telephone (D8W cord)
13. Data cable (EIA/RS-232)
14. Data-module power cable
15. To MDF and system cabinet
16. Printer

Figure 10.   Typical Connections to a data module

Overview of the Installation Procedure

To install a typical data module, you perform the following tasks:

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Checking for Required Equipment   25

Checking for Required Equipment

To physically connect a data module to the system, you need the following parts.

- 105C/D Isolating Data Interface (if connecting to a DC cabinet)

- EIA-232-D (RS-232-C) cable with a male connector (for the data module) and the correct connector for the peripheral equipment

  The cable connects the terminal or PC to the data module

- null-modem converter (optional)

- V.35 cable with correct connectors (not required by all systems)

- D8W telephone cord

  The cord connects the data module's LINE jack to the G3V4 wall jack.

- DCP telephone and D8W cord (optional)

  The D8W cord connects the telephone to the data module's PHONE jack.

- Suitable auxiliary power supply if the optional telephone is installed (D7AP power cord and 400B2 adapter in the US, international power supply, such as the MSP-1, elsewhere).

You must have access to the administration console of the G3V4, either through a terminal and keyboard or through a PC.

A breakout box for RS-232 interfaces may prove helpful in some cases. The RS-232 breakout box helps you to identify the pin configuration of the RS-232 interface on the equipment you are trying to connect.

Setting Hardware Options

Depending on the data module, you may have to set various configuration options using hardware switches, software commands, or both. *You must set the hardware options before you administer or physically install the data module.*

Setting 7400A Data-Module Hardware Options

Most configuration options are controlled by commands entered on the front panel of the 7400A. But you have to make hardware changes when you want to set up the 7400A data-module for use in a modem pool or as a piece of data communications equipment. In a modem-pool, the data module operates as data-terminal equipment (DTE). In most other applications, it functions as data communications equipment (DCE). You have to set the correct operating mode for the data module before you can access the menus for the remaining configuration tasks.

To change the operating mode of the 7400A from DCE to DTE (or vice versa), you change the position of a small circuit board (the Electronic Industries Association

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Setting Hardware Options   26

connector board) inside the case. See Figure 11, "Data Module Mode Selector",
and proceed as follows.

⚠ **WARNING:**

*Electrostatic discharge can severely damage sensitive electronic circuits.
Before handling any electronic hardware, be sure to wear a grounding wrist
strap or other static-dissipating device. Do not touch exposed circuitry or
semiconductor chips.*

1. Unplug the data module from the power receptacle.

2. Remove the access panel on the top of the case by grasping the rear lip
   of the panel and pulling sharply upward.

3. While facing the front of the data module, locate the small EIA connector
   circuit board. It sticks up vertically, and a large, silver arrow on the main
   circuit board points to it.
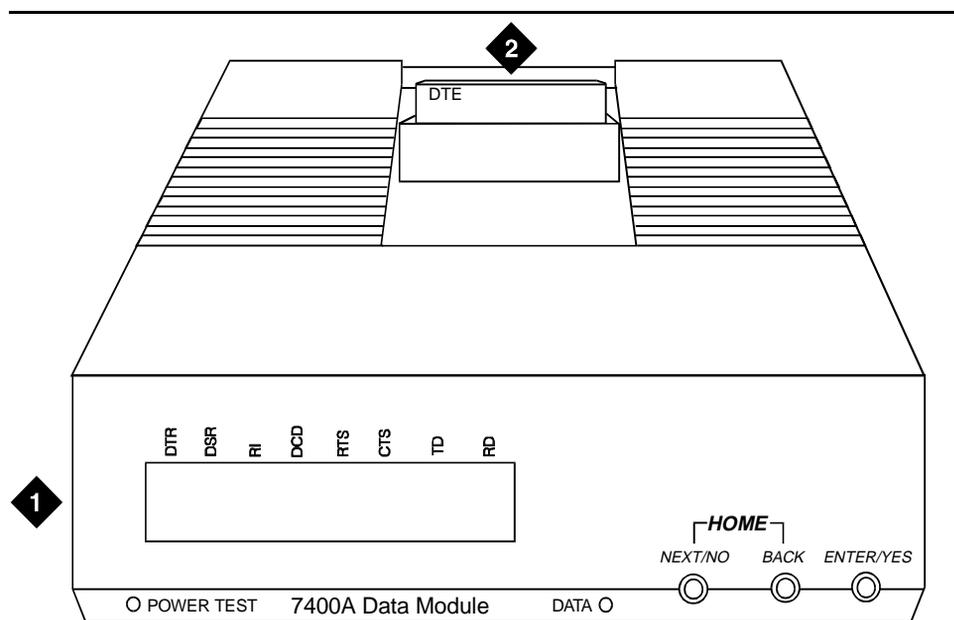
7400atop KLC 053096

1. 7400A data module   2. EIA connector board (shown in DTE mode)

Figure 11.   Data Module Mode Selector

4. Note the three letters engraved in the upper lefthand corner of the EIA
   connector board. Data modules ship from the factory with board inserted
   with "DCE" in the upper left corner.

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5. Use the DCE position to connect to DTE equipment. Use the DTE position to connect to DCE equipment. To change the mode, remove the board by grasping it and pulling it gently upward. Flip the board around, left to right, and reinsert it in the socket so that the correct operating mode, DCE or DTE, appears in the upper lefthand corner.

6. Snap the top cover onto the unit.

Setting 7400B Data-Module Hardware Options

You configure the 7400B data module using DIP switches on the circuit card inside the case. Figure 12 shows the front and rear of a 7400B data module.
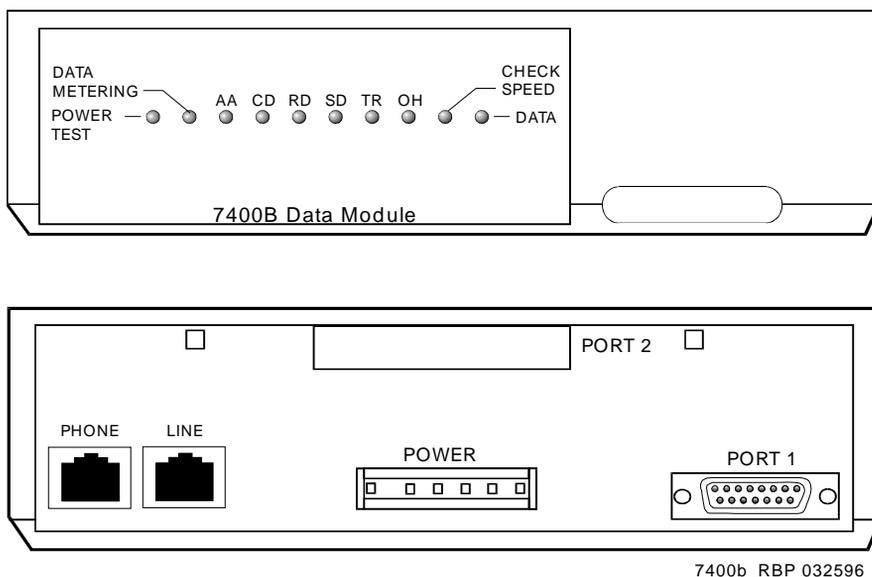
Figure 12.   7400B Data Module

To configure the 7400B data module, proceed as follows.

⚠ WARNING:
Electrostatic discharge can severely damage sensitive electronic circuits. Before handling any electronic hardware, be sure to wear a grounding wrist strap or other static-dissipating device. Do not touch exposed circuitry or semiconductor chips.

1. If you are not attaching a telephone to the data module, activating data metering, or enabling busyout on the local loop, you can use the factory default settings. The 7400C data module is already configured for your use. Stop now.

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Setting Hardware Options

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2. Otherwise, remove the access panel on the top of the case by grasping the rear lip of the panel and pulling sharply upward.

3. Locate the DIP switch block, a bank of tiny switches on the circuit board, in the center of the opening.

   DIP switches 1, 5, and 8 control the attached telephone (if any), data metering, and loopback on local loop.

4. Set the switches for the combination of options that you need to enable, using the chart below as a guide.

No telephone attached, data metering OFF, busyout on local loop OFF (factory default settings)
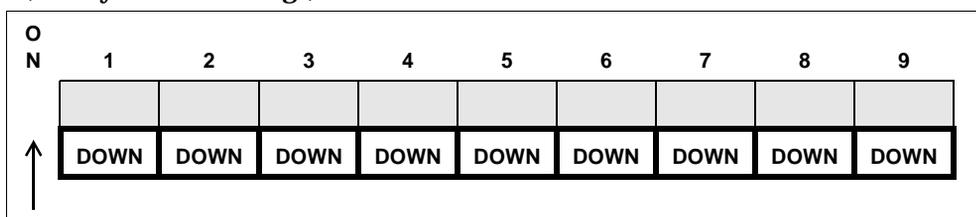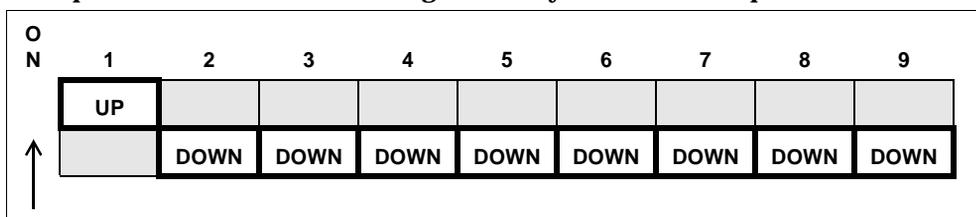
ON	1	2	3	4	5	6	7	8	9
	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN

Telephone attached, data metering OFF, busyout on local loop OFF

ON	1	2	3	4	5	6	7	8	9
	UP								
		DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN

No telephone attached, data metering ON, busyout on local loop OFF

ON	1	2	3	4	5	6	7	8	9
					UP				
	DOWN	DOWN	DOWN	DOWN		DOWN	DOWN	DOWN	DOWN

No telephone attached, data metering OFF, busyout on local loop ON

ON	1	2	3	4	5	6	7	8	9
								UP	
	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN		DOWN

No telephone attached, data metering ON, busyout on local loop ON

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Physically Connecting Data Modules
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O N	1	2	3	4	5	6	7	8	9
↑					UP			UP	
	DOWN	DOWN	DOWN	DOWN		DOWN	DOWN		DOWN

Telephone attached, data metering ON, busyout on local loop OFF

O N	1	2	3	4	5	6	7	8	9
↑	UP				UP				
		DOWN	DOWN	DOWN		DOWN	DOWN	DOWN	DOWN

Telephone attached, data metering OFF, busyout on local loop ON

O N	1	2	3	4	5	6	7	8	9
↑	UP							UP	
		DOWN	DOWN	DOWN	DOWN	DOWN	DOWN		DOWN
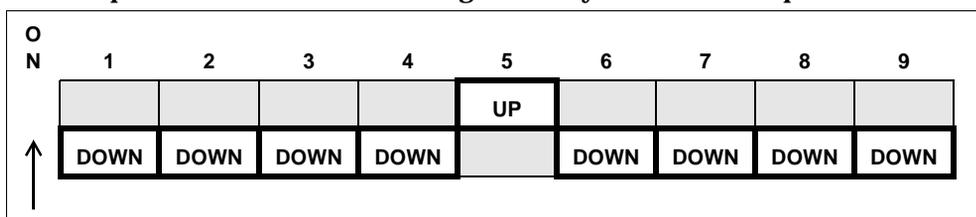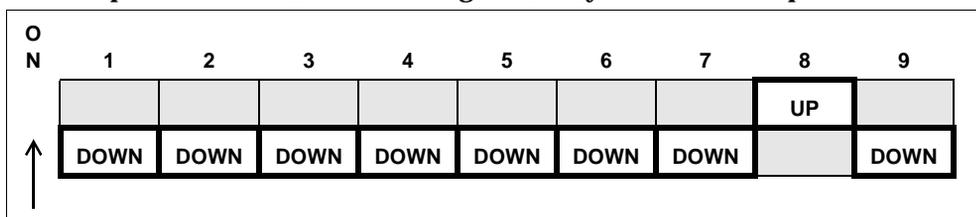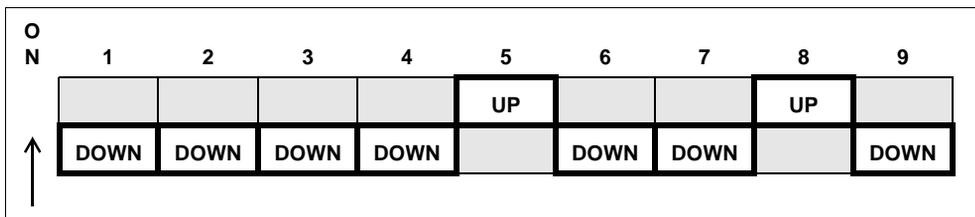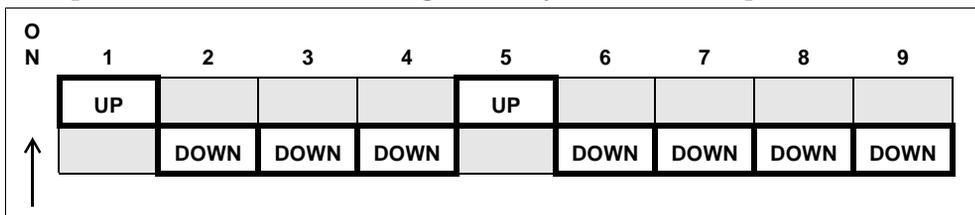
Telephone attached, data metering ON, busyout on local loop ON
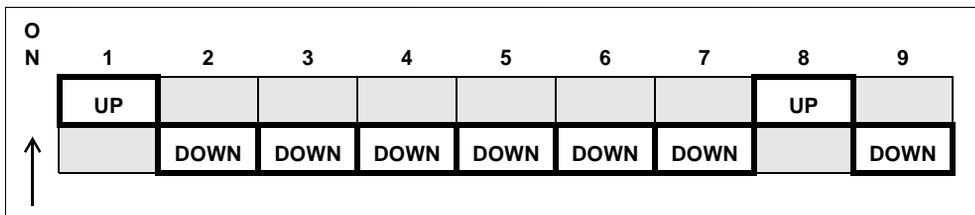
O N	1	2	3	4	5	6	7	8	9
↑	UP				UP			UP	
		DOWN	DOWN	DOWN		DOWN	DOWN		DOWN
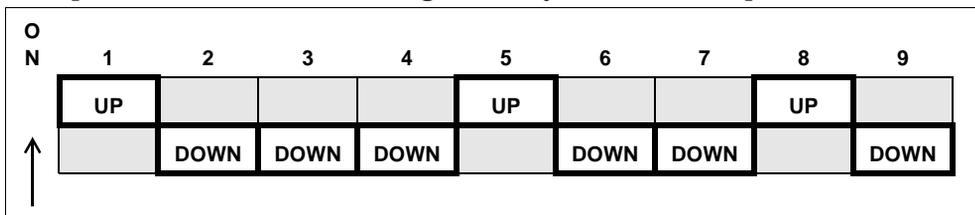
5. Replace the cover on the data module.

Physically Connecting Data Modules

To connect a single data module, follow the procedure in following section. To connect multiple data modules, see .

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Physically Connecting Data Modules

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Connecting a Single Data Module

> ⚠ **CAUTION:**
> *You must install a 105D or 105C isolating data interface adapter when connecting data modules to equipment in DC-powered cabinets.*

Connect the data module to your house wiring or G3V4 as follows.

1. Attach a D8W cable to the **LINE** port of the data module.

2. If you are going to attach a telephone to the data module

   a. Attach a 400B2 adapter to the other end of the D8W cable.

   b. Plug the adapter into a modular wall jack or 103A connector.

   c. Plug a D7AP cord into the 400B2 adapter.

   d. Plug the other end of the D7AP cord into the auxiliary power supply for the telephone.

      You must have a separate power supply for the telephone and for the data module.

   e. Attach a D8W cable to the **PHONE** port of the data module.

3. If you are not attaching a telephone, attach the D8W cable from the Line port of the data module to a modular wall jack or 103A connector.

4. Attach the data-module power supply to the power connector on the back of the data module, and plug the power supply into an AC electrical outlet.

5. Connect an RS-232 cable to the **PORT 1** connector on the back of the data module.

6. If the equipment includes a V.35 interface, plug a V.35 cable into the **V.35** connector on the data module.

7. If the data module is a 7400B DCE-only device and if the other end of the cable is connected to another DCE device, insert a null-modem adapter between the data module and the RS-232 cable.

8. Connect the other end of the RS-232 cable to a serial (COM) port connection on the data device (host computer, serial printer, modem, etc.).

9. Go to the configuration procedure for the data module you are using:

   ■ "Overview of the Installation Procedure" on page 24

   ■ "Configuring the 7400B Data Module" on page 52

   ■ "Configuring the 7400C HSL (High- Speed Link) Data Module" on page 55

   ■ "Configuring the 7400D Data Module" on page 58

   ■ "ExpressRoute 1000 Data Module" on page 70

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Physically Connecting Data Modules   31

Connecting Multiple Data Modules to the System

> ⚠ **CAUTION:**
> *You must install a 105D or 105C isolating data interface adapter when connecting data modules to equipment in DC-powered cabinets.*

You install multiple data modules in a data mounting on the G3V4. A Z77A data mounting can take up to 8 data modules. See Figure 13.
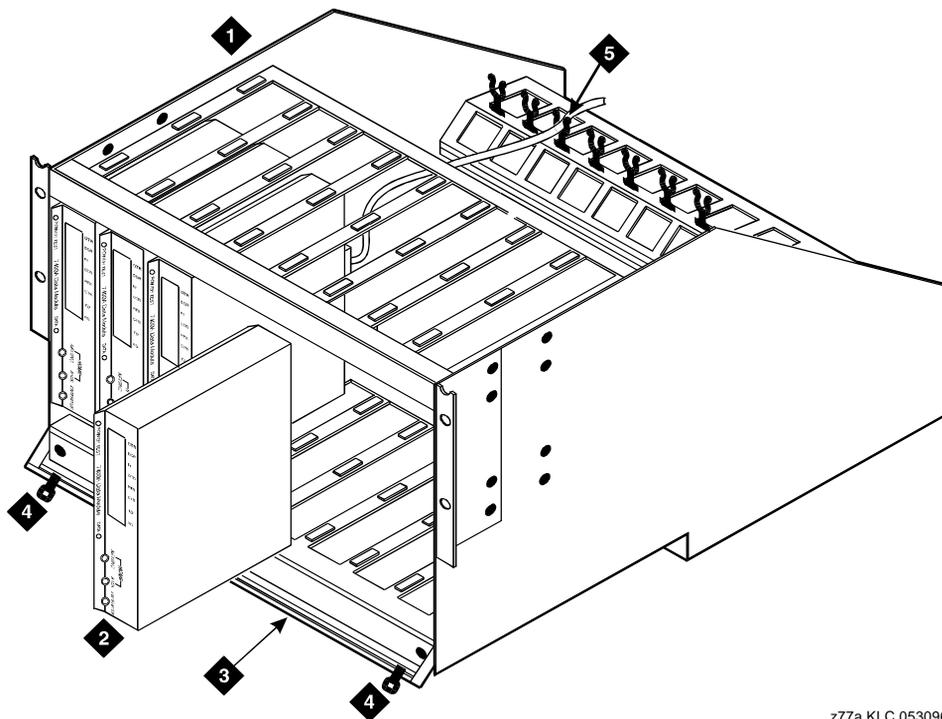
z77a KLC 053096

1. Z77A data mounting
2. Data module (7400A shown)
3. Retaining bar
4. Retaining bar plunger
5. Twist-lock cable retainers

Figure 13.   Z77A Data Mounting

Proceed as follows.

1. Set data-module hardware options before installing the hardware in the mounting.

2. Release the horizontal retaining bar at the front of the data mounting by pulling out the plungers at the left and right sides of the bar.

3. Pull the retaining bar out and down.

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Configuring the 7400A Data Module   32

4. Connect the a 25-pin RS-232 cable to the 25-pin connector on the rear of the data module.

5. Route the cable through the data mounting and through the twist-lock cable retainer on the top of the data mounting.

6. attach the other end of the RS-232 cable to DTE or DCE .

7. Insert the data module vertically into the data mounting. Be sure the display is to the top of the data mounting.

8. Repeat steps 2 through 5 for each data module.

9. Return the horizontal retaining bar to its original position to secure the data modules inside the data mounting.

10. Go to the configuration procedure for the data module you are using:

Configuring the 7400A Data Module

The 7400A is a full-duplex, asynchronous data module for use with Digital Communications Protocol (DCP). It is designed for applications that do not require integration of voice and data. It supports asynchronous connections at speeds up to 19.2 Kbps via an EIA-232-D interface. Figure 14 represents the front and back of the 7400A data module.

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   Configuring the 7400A Data Module   33

7400a RBP 032596
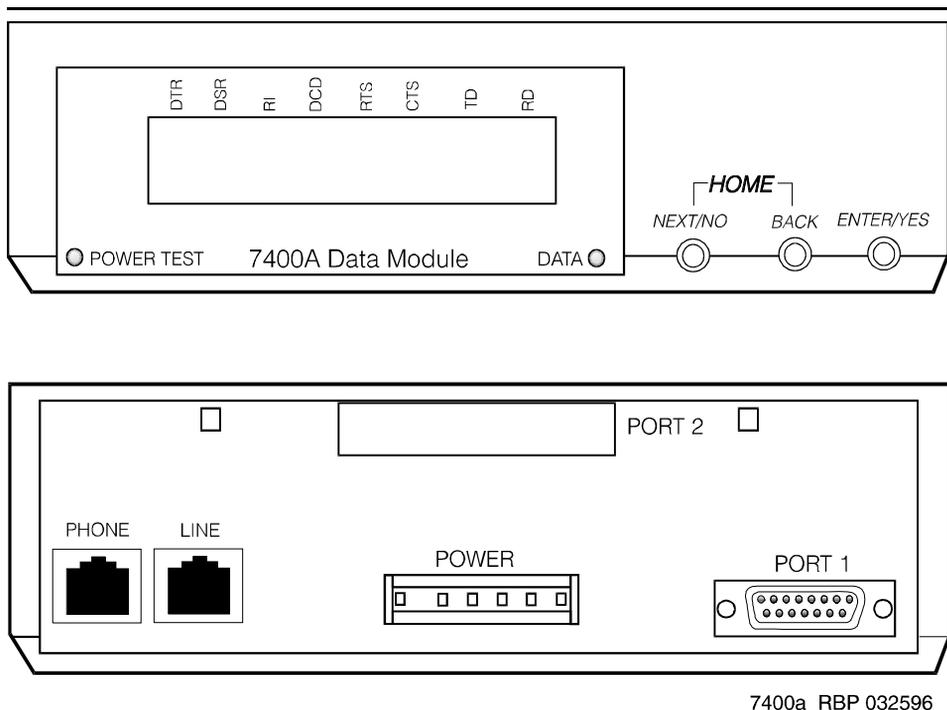
Figure 14.   7400A asynchronous data module

Using the 7400A menu system

On the 7400A, you select communications settings using the controls on the front panel of the device . An LCD displays the configuration menus. You use the **NEXT/NO** and **BACK** buttons to navigate through the menus and the **ENTER/YES** button to select values.

Powering up the 7400A

When you power up the 7400A, the **POWER TEST** and **DATA** LEDs light up, and the 7400A data module displays the HOME screen on the LCD. The figure below

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Configuring the 7400A Data Module

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represents a typical home screen. Dashes indicate a lead that is connected, ovals a lead that is not.
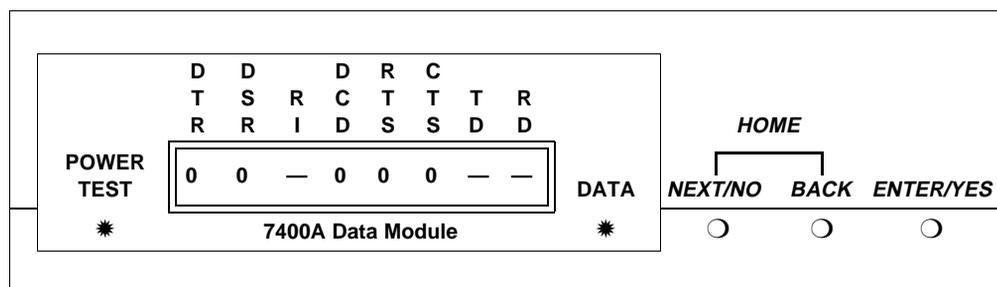
Adjusting the control-panel display on the 7400A

1. Adjust the contrast of the display so that you can see it comfortably. Press the **ENTER/YES** button. This steps you through the available contrast settings.

Push the button indicated by the arrow (➜)

7400A data module, EIA RS-232 interface circuits

The data module communicates with other equipment via a configurable, 25-pin RS-232 serial interface. DCE and DTE operation use different sets of pins and assign different functions to some of the same pins. To avoid confusion later on, please take a moment to review the differences. See the table below (the pins most discussed in subsequent sections have been emphasized).

Pin	Name	Function	DCE	DTE
1	—	Not used	—	—
2	BA (TD)	Transmitted Data	Input	Output
3	BB (RD)	Received Data	Output	Input
4	CA (RTS)	Request to Send	Input	Output
5	CB (CTS)	Clear to Send	Output	Input
6	CC (DSR)	Data Communication Equipment Ready	Output	Input
7	AB (SG)	Signal Ground	Common	Common

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   Configuring the 7400A Data Module   35

Pin	Name	Function	DCE	DTE
8	CF (RLSD)	Received Line Signal Detector	Output	Input
9	—	Reserved for Testing	+12 volts	—
10	—	Reserved for Testing	-12 volts	—
11	—	Not used	—	—
12	CI	Data Signal Rate Select (DCE Source)	Output	Input
13	**CI2**	**Data Signal Rate Select 2 (DCE Source)**	**—**	**Input**
14	—	Not used	—	—
15	DB*	Transmitter Signal Element Timing (DCE Source)	Output	Input
16	—	Not used	—	—
17	DD*	Receiver Signal Element Timing (DCE Source)	Output	Input
18	LL	Local Loopback	Input	Output
19	CH2	Data Signal Rate Select 2 (DTE Source)	—	Output
20	CD (DTR)	Data Terminal Equipment Ready	Input	Output
21	RL	Remove Loopback	Input	Output
22	CE (RI)	Ring Indicator	Output	Input
23	CH	Data Signal Rate Select (DTE Source)	Input	Output
24	DA*	Transmit Signal Element Timing (DTE Source)	Input	Output
25	TM	Test Mode	Output	Input

*Circuits are not used for asynchronous operation. Outputs are clamped OFF and inputs are ignored.

Configuring the 7400A for data communications equipment (DCE) applications

If you are not going to use the 7400A data module in a modem pool, proceed as follows.

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Configuring the 7400A Data Module   36

Setting interface options on 7400A DCE

1. To access the menus, press the **NEXT/NO** button.

```
0   0  —  0   0   0  —  —       DATA    NEXT/NO   BACK   ENTER/YES
                                  ●         ❍        ❍        ➜ ●
```

Push the button indicated by the arrow (➜)

2. When the **SET OPTIONS?** prompt appears on the LCD. Press the **NEXT/NO** button.

```
SET OPTIONS?                     DATA    NEXT/NO   BACK   ENTER/YES
                                  ●        ➜ ●       ❍        ❍
```

Push the button indicated by the arrow (➜)

3. The **VIEW OPTIONS?** prompt appears. Press the **NEXT/NO** button.

```
VIEW OPTIONS?                    DATA    NEXT/NO   BACK   ENTER/YES
                                  ●        ➜ ●       ❍        ❍
```

Push the button indicated by the arrow (➜)

You will return to the options menus in a minute. But first you must select a command interface for the data module.

4. The **SET INTERFACE?** prompt appears. Press the **ENTER/YES** button.

```
SET INTERFACE?                   DATA    NEXT/NO   BACK   ENTER/YES
                                  ●         ❍        ❍        ➜ ●
```

Push the button indicated by the arrow (➜)

A series of **INT = *InterfaceType*?** prompts appears.

5. For each prompt, if you want to select the interface, press the **ENTER/YES** button or, if you want a different interface, press the **NEXT/NO** button.

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a. Enable the answer-only interface if the data module must operate without any kind of external control:

Select an option (NEXT/NO or ENTER/YES)

b. Enable the AT-command interface if users need to control the data module remotely, using a dial-up connection and Hayes-compatible modem commands:

Select an option (NEXT/NO or ENTER/YES)

c. Enable the keyboard-dial interface if users need to control the data module interactively, from a terminal:

Select an option (NEXT/NO or ENTER/YES)

After you select an interface, the data module runs a self-test and returns to the HOME screen.

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Setting speed options on 7400A DCE

1. Press the **NEXT/NO** button to continue with the setup procedure.

```
┌─────────────────────────┐
│ 0   0  —  0   0   0  — — │      DATA   NEXT/NO   BACK   ENTER/YES
└─────────────────────────┘              ●       →●        ○          ○
```

Push the button indicated by the arrow (➜)

2. The **SET OPTIONS?** prompt appears on the LCD. Press the **ENTER/YES** button.

```
┌─────────────────────────┐
│ SET OPTIONS?            │      DATA   NEXT/NO   BACK   ENTER/YES
└─────────────────────────┘              ●        ○        ○        →●
```

Push the button indicated by the arrow (➜)

A series of **SET *number* SPEED?** prompts appears.

3. Press the **NEXT/NO** button until you see the **SET 9600 SPEED?** prompt. Then press the **ENTER/YES** button.

```
┌─────────────────────────┐
│ SET 9600 SPEED?        │      DATA   NEXT/NO   BACK   ENTER/YES
└─────────────────────────┘              ●        ○        ○        →●
```

Push the button indicated by the arrow (➜)

Most G3V4 connections operate at the 9600 speed.

4. The **9600 = ON?** prompt appears. Press the **ENTER/YES** button.

```
┌─────────────────────────┐
│ 9600=ON?               │      DATA   NEXT/NO   BACK   ENTER/YES
└─────────────────────────┘              ●        ○        ○        →●
```

Push the button indicated by the arrow (➜)

5. The **CONTINUE?** prompt appears. Press the **ENTER/YES** button.

```
┌─────────────────────────┐
│ CONTINUE?              │      DATA   NEXT/NO   BACK   ENTER/YES
└─────────────────────────┘              ●        ○        ○        →●
```

Push the button indicated by the arrow (➜)

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6. The **SET 19200 SPEED?** prompt appears. Press the **NEXT/NO** button.

SET 19200 SPEED?			

DATA	NEXT/NO	BACK	ENTER/YES
●	➜ ●	○	○

Push the button indicated by the arrow (➜)

7. If you selected the AT-command interface in the section "Setting interface options on 7400A DCE" (above), you are finished configuring the 7400A data module.

Setting the automatic-answer feature on 7400A DCE

You can set up the 7400A data module to automatically answer calls or you can have it ignore calls until an operator answers manually. Set up the data module for automatic answering unless specifically directed to otherwise.

1. When the **SET ANSWER?** prompt appears, press the **ENTER/YES** button.

SET ANSWER?			

DATA	NEXT/NO	BACK	ENTER/YES
●	○	○	➜ ●

Push the button indicated by the arrow (➜)

2. When the **ANS = AUTO?** prompt appears, if you want to enable automatic answering, press the **ENTER/YES** button. Otherwise, press the **NEXT/NO** button.

ANS = AUTO?			

DATA	NEXT/NO	BACK	ENTER/YES
●	○	○	○

Select an option (NEXT/NO or ENTER/YES)

3. If you pressed **NEXT/NO** in the preceding step, the **ANS —> MANUAL?** prompt appears. If you want to disable automatic answering, press the **ENTER/YES** button. Otherwise, press the **NEXT/NO** button.

ANS —> MANUAL?			

DATA	NEXT/NO	BACK	ENTER/YES
●	○	○	○

Select an option (NEXT/NO or ENTER/YES)

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4. The **CONTINUE?** prompt appears. Press the **ENTER/YES** button.

CONTINUE?	DATA	NEXT/NO	BACK	ENTER/YES
	●	○	○	➜ ●

Push the button indicated by the arrow (➜)

Setting the break-disconnect option on 7400A DCE

This setting specifies the length of the BREAK signal, a string of 10 or more spaces that tells the host that the user needs to interrupt operations. There are three options: TRIPLE, LONG (the default), and NONE. Accept the default values, unless otherwise instructed.

1. When the **SET BREAK DISC?** prompt appears, press the NEXT/NO button to keep the default.

SET BREAK DISC?	DATA	NEXT/NO	BACK	ENTER/YES
	●	➜ ●	○	○

Push the button indicated by the arrow (➜)

Configuring the RS-232 interface on 7400A DCE

You can set each pin of the RS-232 cable to meet the needs of specific applications or connected equipment. however, in most cases, you can use the defaults.

To set the EIA leads, proceed as follows:

1. When the **SET *LeadName* LEAD?** prompt appears, press the **NEXT/NO** button to keep the default or the **ENTER/YES** button to make a change.

SET *LeadName* LEAD?	DATA	NEXT/NO	BACK	ENTER/YES
	●	➜ ●	○	○

Push the button indicated by the arrow (➜)

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2. If you pressed the **ENTER/YES** button at the **SET *LeadName* LEAD?** prompt**,** the ***LeadName* -> ON?** prompt appears. Press the **ENTER/YES** button.

***LeadName* -> ON?**			

DATA	NEXT/NO	BACK	ENTER/YES
●	○	○	➜ ●

Push the button indicated by the arrow (➜)

3. Repeat until all leads have been set.

Setting parity on 7400A DCE

Next you need to identify the type of parity coding that the data module should expect. Parity is an error-detection scheme that is based on the value of a parity bit in each unit of information. Four coding schemes are used: **ODD**, **EVEN**, **MARK**, and **SPACE**. In odd-parity coding, the parity bit is set to 0 if the number of 1s in the information is odd, 1 if it is even. In even-parity coding, the parity bit is set to 0 if the number of 1s in the information is even, 1 if it is odd. Mark-parity coding always sets the parity bit to 1. Space-parity coding always sets the parity bit to 0.

1. Accept the default value, unless otherwise instructed. When the **SET PARITY?** prompt appears, press the NEXT/NO button to keep the default, **SPACE**.

SET PARITY?			

DATA	NEXT/NO	BACK	ENTER/YES
●	➜ ●	○	○

Push the button indicated by the arrow (➜)

Enabling remote loopback testing on 7400A DCE

You can set the remote loopback option to **GRANT** or **DENY**.

1. Accept the default value, unless otherwise instructed. When the **SET REMOTE LOOP?** prompt appears, press the NEXT/NO button to keep the default, **GRANT**.

SET REMOTE LOOP?			

DATA	NEXT/NO	BACK	ENTER/YES
●	➜ ●	○	○

Push the button indicated by the arrow (➜)

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Configuring the ring indicator on 7400A DCE

The ring-indicator (pin 22) setting can have either of two values: **CYCLE** or **ON** (the default).

1. Accept the default values, unless otherwise instructed. When the **SET RI LEAD?** prompt appears, press the NEXT/NO button to keep the default, ON.

```
┌─────────────────────────────┐
│  SET  RI LEAD?              │              ┌─────┐
└─────────────────────────────┘   DATA   NEXT/NO   BACK   ENTER/YES
                                   ●      ➜ ●       ○        ○
```

Push the button indicated by the arrow (➜)

Enabling remote loopback on 7400A DCE

The remote-loopback setting (pin 21) can have either of two values: **ON** or **OFF** (the default).

1. Accept the default values, unless otherwise instructed. When the **SET RL LEAD?** prompt appears, press the **NEXT/NO** button to keep the default, **ON**.

```
┌─────────────────────────────┐
│  SET  RL LEAD?             │              ┌─────┐
└─────────────────────────────┘   DATA   NEXT/NO   BACK   ENTER/YES
                                   ●      ➜ ●       ○        ○
```

Push the button indicated by the arrow (➜)

Setting the signals-disconnect (SIGLS DISC) option on 7400A DCE

The settings can have either of two values: **ON** (the default) or **OFF**.

Accept the default values, unless otherwise instructed.

1. When the **SET SIGLS DISC?** prompt appears, press the **NEXT/NO** button to keep the default, **ON**.

```
┌─────────────────────────────┐
│  SET  SIGLS DISC?          │              ┌─────┐
└─────────────────────────────┘   DATA   NEXT/NO   BACK   ENTER/YES
                                   ●      ➜ ●       ○        ○
```

Push the button indicated by the arrow (➜)

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Enabling test mode on 7400A DCE

The test-mode (pin 25) setting can have either of two values: **ON** or **OFF** (the default).

1. Accept the default values, unless otherwise instructed. When the **SET TM LEAD?** prompt appears, press the **NEXT/NO** button to keep the default, **ON**.

```
┌──────────────────────────┐
│  SET  TM LEAD?           │         DATA   NEXT/NO   BACK   ENTER/YES
└──────────────────────────┘          ●      → ●       ○        ○
```

Push the button indicated by the arrow (➜)

Exiting menus and saving changes on 7400A DCE

1. When the **DONE?** prompt appears, press the **ENTER/YES** button.

```
┌──────────────────────────┐
│  DONE?                   │         DATA   NEXT/NO   BACK   ENTER/YES
└──────────────────────────┘          ●       ○        ○      → ●
```

Push the button indicated by the arrow (➜)

2. When the SAVE CHANGES? prompt appears, press the **ENTER/YES** button.

```
┌──────────────────────────┐
│  SAVE CHANGES?           │         DATA   NEXT/NO   BACK   ENTER/YES
└──────────────────────────┘          ●       ○        ○      → ●
```

Push the button indicated by the arrow (➜)

Your changes are saved.

```
┌──────────────────────────┐
│  CHANGES SAVED           │         DATA   NEXT/NO   BACK   ENTER/YES
└──────────────────────────┘          ●       ○        ○      → ●
```

Push the button indicated by the arrow (➜)

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You return HOME.
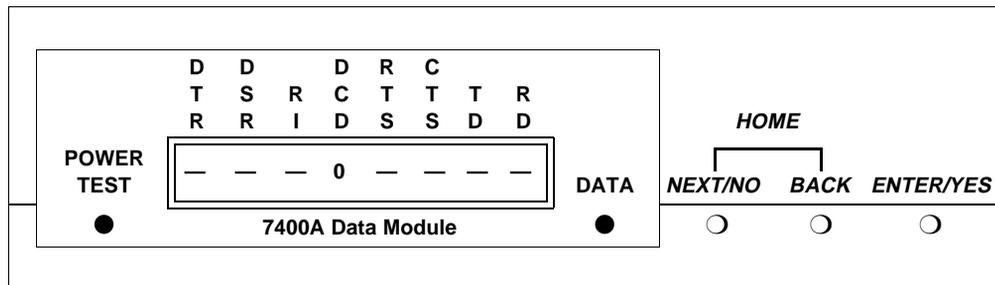
Checking G3V4 administration on 7400A DCE

Check that the G3V4 is administered to support the 7400A data module in the DCE application as follows:

1. If necessary, return to the HOME display by pressing the **NEXT/NO** and **BACK** buttons at the same time.

2. From the HOME display, press **NEXT/NO** until **ANS/ORIG CALL?** is displayed, then press the **ENTER/YES** button.

3. If you see the message **WAITING** ... **DISCONNECTED**, the switch has not been administered correctly.

4. If you see the message **DIAL TONE** followed by **DISCONNECT CALL?**, the G3V4 is correctly administered for the 7400A data module. Press the **ENTER/YES** button to return to the menu.

   The 7400A replies **WAITING** ... **DISCONNECTED** and returns to the **ANS/ ORIG CALL?** menu.

5. Return to the HOME display by pressing the **NEXT/NO** and **BACK** buttons at the same time.

Configuring the 7400A for modem pooling (DTE) applications

From the HOME screen, proceed as follows.

Setting speed options on 7400A DTE

1. To access the menus, press the **NEXT/NO** button.

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2. When the **SET OPTIONS?** prompt appears on the LCD, press the **ENTER/ YES** button.

```
        D    D        D    R    C
        T    S    R    C    T    T    T    R
        R    R    I    D    S    S    D    D            HOME

POWER   ┌──────────────────────────────┐        ┌──────────┐
TEST    │  SET OPTIONS?                 │  DATA  NEXT/NO   BACK   ENTER/YES
 ●      │          7400A Data Module    │   ●    → ●        ○         ○
        └──────────────────────────────┘
```

Push the button indicated by the arrow (➜)

A series of **SET *number* SPEED?** prompts appears.

3. Press the **NEXT/NO** button until you see the **SET 9600 SPEED?** prompt. Then press the **ENTER/YES** button.

```
┌──────────────────────────────┐        ┌──────────┐
│  SET 9600 SPEED?              │  DATA  NEXT/NO   BACK   ENTER/YES
└──────────────────────────────┘   ●      ○         ○       → ●
```
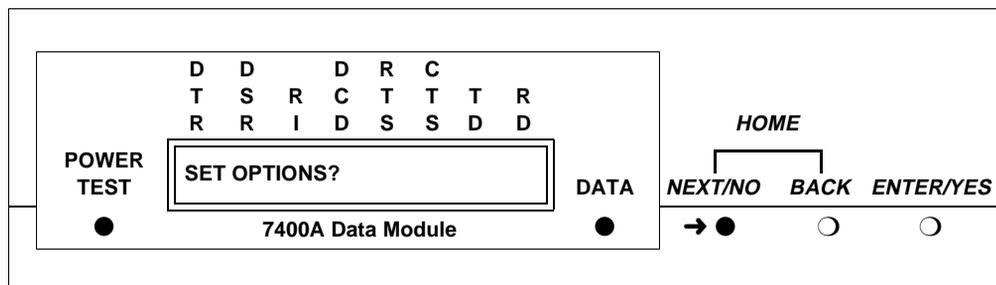
Push the button indicated by the arrow (➜)

Most G3V4 connections operate at the 9600 speed.

4. The **9600 = OFF?** prompt appears. Press the **NEXT/NO** button.

```
┌──────────────────────────────┐        ┌──────────┐
│  9600=OFF?                    │  DATA  NEXT/NO   BACK   ENTER/YES
└──────────────────────────────┘   ●      → ●       ○         ○
```

Push the button indicated by the arrow (➜)

5. The **9600 —> ON?** prompt appears. Press the **ENTER/YES** button.

```
┌──────────────────────────────┐        ┌──────────┐
│  9600 —> ON?                  │  DATA  NEXT/NO   BACK   ENTER/YES
└──────────────────────────────┘   ●      ○         ○       → ●
```

Push the button indicated by the arrow (➜)

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6. The **CONTINUE?** prompt appears. Press the **ENTER/YES** button.

```
┌─────────────────────────────┐
│  CONTINUE?                   │         DATA   NEXT/NO   BACK   ENTER/YES
└─────────────────────────────┘          ●        ○        ○       → ●
```

Push the button indicated by the arrow (→)

7. The **SET 19200 SPEED?** prompt appears. Press the **NEXT/NO** button to keep the default.

```
┌─────────────────────────────┐
│  SET 19200 SPEED?            │         DATA   NEXT/NO   BACK   ENTER/YES
└─────────────────────────────┘          ●      → ●        ○         ○
```

Push the button indicated by the arrow (→)

8. The **SET AT CONTROL?** prompt appears. Press the **ENTER/YES** button to enable Hayes-compatible modem commands. Press the **NEXT/NO** button to accept the default (OFF).

```
┌─────────────────────────────┐
│  SET AT CONTROL?             │         DATA   NEXT/NO   BACK   ENTER/YES
└─────────────────────────────┘          ●        ○        ○         ○
```

Select an option (NEXT/NO or ENTER/YES)

Use the AT CONTROL setting to let users control the data module remotely, using a dial-up connection.

9. If you enabled AT commands, the **AT = OFF?** prompt appears. Press the **NEXT/NO** button.

```
┌─────────────────────────────┐
│  AT=OFF?                     │         DATA   NEXT/NO   BACK   ENTER/YES
└─────────────────────────────┘          ●      → ●        ○         ○
```

Push the button indicated by the arrow (→)

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10. If you enabled AT commands, the **AT —> ON?** prompt appears. Press the **ENTER/YES** button.

```
┌─────────────────────────────┐                    ┌──────────────┐
│  AT —> ON?                   │        DATA   NEXT/NO    BACK   ENTER/YES
└─────────────────────────────┘          ●       ○        ○       ➜ ●
```

Push the button indicated by the arrow (➜)

11. If you enabled AT commands, the **CONTINUE?** prompt appears. Press the **ENTER/YES** button.

```
┌─────────────────────────────┐                    ┌──────────────┐
│  CONTINUE?                   │        DATA   NEXT/NO    BACK   ENTER/YES
└─────────────────────────────┘          ●       ○        ○       ➜ ●
```

Push the button indicated by the arrow (➜)

Configuring the RS-232 interface on 7400A DTE

You can set each pin of the RS-232 cable to meet the needs of specific applications, though in most cases, the defaults should work. For a list of pins and leads, see Table 11 below.

The Data Signal-Rate Select EIA leads—**CI**, **CI2**, **CH**, and **CH2**—of the RS-232 cable indicate the receive/transmit speeds that the data module can use. To set the EIA signal-rate leads, proceed as follows:

1. From the HOME display, press **NEXT/NO** until **SET OPTIONS?** appears. Then press the **ENTER/YES** button.

```
┌─────────────────────────────┐                    ┌──────────────┐
│  SET OPTIONS?                │        DATA   NEXT/NO    BACK   ENTER/YES
└─────────────────────────────┘          ●       ○        ○       ➜ ●
```

Push the button indicated by the arrow (➜)

2. When the **SET 300 SPEED?** prompt appears, press **NEXT/NO** until **SET CI LEAD?** appears. Then, using the table and instructions below as a guide, start setting the leads.

```
┌─────────────────────────────┐                    ┌──────────────┐
│  SET CI LEAD?                │        DATA   NEXT/NO    BACK   ENTER/YES
└─────────────────────────────┘          ●       ○        ○       ➜ ●
```

Push the button indicated by the arrow (➜)

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Table 11.   DTE-mode RS-232 signal-rate lead settings for the 7400A

	CI	CH	CI2	CH2
If you selected AT control in an earlier step, set	OFF	OFF	OFF	OFF
You want only 1 data speed.	OFF	OFF	OFF	OFF
You want 2 data speeds.	ON	ON	OFF	OFF
You want only 3 or 4 data speeds.	ON	ON	ON	ON

3. When the **SET CI LEAD?** prompt appears, press the **NEXT/NO** button to keep the default (OFF) or the **ENTER/YES** button to make a change.

```
SET  CI LEAD?
```

DATA   *NEXT/NO*   *BACK*   *ENTER/YES*

●   ● ?   ○   ● ?

Choose a button indicated by the question mark (**?**)

4. If you pressed **ENTER/YES** in the preceding step and the **CI LEAD = ON?** prompt appears, press the **ENTER/YES** button again to confirm your selection.

```
CI LEAD=ON?
```

DATA   *NEXT/NO*   *BACK*   *ENTER/YES*

●   ○   ○   ➔ ●

Push the button indicated by the arrow (➔)

5. When the **SET CI2 LEAD?** prompt appears, press the **NEXT/NO** button to keep the default (OFF) or the **ENTER/YES** button to make a change.

```
SET  CI2 LEAD?
```

DATA   *NEXT/NO*   *BACK*   *ENTER/YES*

●   ● ?   ○   ● ?

Choose a button indicated by the question mark (**?**)

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6. If you pressed **ENTER/YES** in the preceding step and the
   CI2 LEAD = ON? prompt appears press the **ENTER/YES** button again to
   confirm your selection.

CI2 LEAD=ON?	DATA	NEXT/NO	BACK	ENTER/YES
	●	○	○	➜ ●

Push the button indicated by the arrow (➜)

7. When the **SET CH LEAD?** prompt appears, press the **NEXT/NO** button to
   keep the default (OFF) or the **ENTER/YES** button to make a change.

SET CH LEAD?	DATA	NEXT/NO	BACK	ENTER/YES
	●	● ?	○	● ?

*Choose a button indicated by the question mark (**?**)*

8. If you pressed **ENTER/YES** in the preceding step and the **CH LEAD =
   ON?** prompt appears, press the **ENTER/YES** button again to confirm your
   selection.

CH LEAD=ON?	DATA	NEXT/NO	BACK	ENTER/YES
	●	○	○	➜ ●

Push the button indicated by the arrow (➜)

9. If the **SET CH2 LEAD?** prompt appears, press the **NEXT/NO** button to
   keep the default (OFF) or the **ENTER/YES** button to make a change.

SET CH2 LEAD?	DATA	NEXT/NO	BACK	ENTER/YES
	●	● ?	○	● ?

*Choose a button indicated by the question mark (**?**)*

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10. The maintenance-option EIA leads configure loopback testing for the data module. You do not need to set any specific options. So, when the **SET LL LEAD?** prompt appears, press the **NEXT/NO** and **BACK** buttons together to return HOME.

```
┌─────────────────────────────┐
│  SET  LL LEAD?              │       DATA    NEXT/NO    BACK    ENTER/YES
└─────────────────────────────┘        ●       →●       →●          ○
```

Push the button indicated by the arrow (➜)

11. When the **SAVE CHANGES?** prompt appears, press the **ENTER/YES** button.

```
┌─────────────────────────────┐
│  SAVE CHANGES?             │       DATA    NEXT/NO    BACK    ENTER/YES
└─────────────────────────────┘        ●        ○        ○        →●
```

Push the button indicated by the arrow (➜)

The **CHANGES SAVED** message flashes on screen, and you return to the HOME screen. The data module is now configured.

Restoring factory defaults on 7400A DTE

If necessary, you can always revert to the factory default settings. From the HOME screen, proceed as follows.

1. To access the menus, press the **NEXT/NO** button.

```
┌─────────────────────────────┐
│  0   0  —  0   0   0  — —  │       DATA    NEXT/NO    BACK    ENTER/YES
└─────────────────────────────┘        ●       →●        ○         ○
```

Push the button indicated by the arrow (➜)

2. When the **SET OPTIONS?** prompt appears on the LCD, press the **NEXT/NO** button.

```
┌─────────────────────────────┐
│  SET  OPTIONS?             │       DATA    NEXT/NO    BACK    ENTER/YES
└─────────────────────────────┘        ●       →●        ○         ○
```

Push the button indicated by the arrow (➜)

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3. When the **VIEW OPTIONS?** prompt appears on the LCD, press the **NEXT/ NO** button.

VIEW OPTIONS?		DATA	NEXT/NO	BACK	ENTER/YES
		●	➜ ●	❍	❍

Push the button indicated by the arrow (➜)

4. When the **TEST - RESET?** prompt appears on the LCD, press the **ENTER/YES** button.

TEST - RESET?		DATA	NEXT/NO	BACK	ENTER/YES
		●	❍	❍	➜ ●

Push the button indicated by the arrow (➜)

5. When the **DATA LOOPBACK?** prompt appears on the LCD, press the **NEXT/NO** button.

DATA LOOPBACK?		DATA	NEXT/NO	BACK	ENTER/YES
		●	➜ ●	❍	❍

Push the button indicated by the arrow (➜)

6. When the **SELF-TEST?** prompt appears on the LCD, press the **NEXT/NO** button.

SELF - TEST?		DATA	NEXT/NO	BACK	ENTER/YES
		●	➜ ●	❍	❍

Push the button indicated by the arrow (➜)

7. When the **LOCAL LOOPBACK?** prompt appears on the LCD, press the **NEXT/NO** button.

LOCAL LOOPBACK?		DATA	NEXT/NO	BACK	ENTER/YES
		●	➜ ●	❍	❍

Push the button indicated by the arrow (➜)

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8. When the **LOCAL LOOP/ST?** prompt appears on the LCD, press the
   NEXT/NO button.

```
┌─────────────────────────────┐                       ┌──────────┐
│  LOCAL LOOP/ST?             │     DATA    NEXT/NO    BACK   ENTER/YES
└─────────────────────────────┘       ●     ➜ ●        ○        ○
```
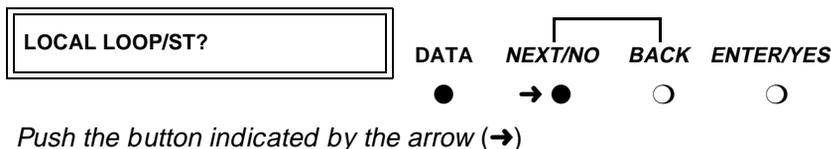
   Push the button indicated by the arrow (➜)

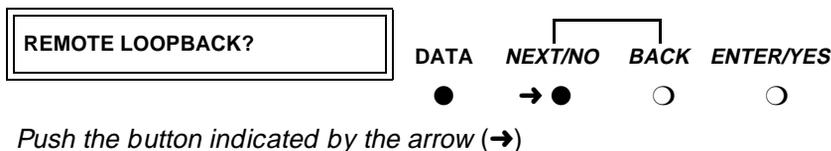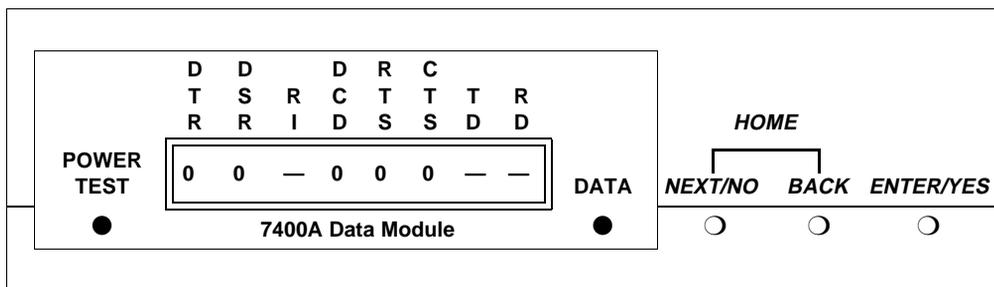9. When the **REMOTE LOOPBACK?** prompt appears on the LCD, press the
   NEXT/NO button.

```
┌─────────────────────────────┐                       ┌──────────┐
│  REMOTE LOOPBACK?           │     DATA    NEXT/NO    BACK   ENTER/YES
└─────────────────────────────┘       ●     ➜ ●        ○        ○
```

   Push the button indicated by the arrow (➜)

10. When the **RESET OPTIONS?** prompt appears on the LCD, press the
    ENTER/YES button.

```
┌─────────────────────────────┐                       ┌──────────┐
│  RESET OPTIONS?             │     DATA    NEXT/NO    BACK   ENTER/YES
└─────────────────────────────┘       ●        ○        ○      ➜ ●
```

    Push the button indicated by the arrow (➜)
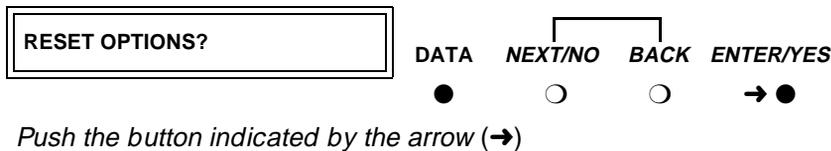
The factory options are restored, and you return to the HOME screen.

```
┌──────────────────────────────────────────────────────────────────────────┐
│   ┌────────────────────────────────────┐                                   │
│   │  D   D       D   R   C              │                                   │
│   │  T   S   R   C   T   T   T   R      │              HOME                 │
│   │  R   R   I   D   S   S   D   D      │           ┌──────────┐            │
│  POWER │                               │                                   │
│  TEST  │ 0   0  —  0   0   0  — —       │    DATA  NEXT/NO   BACK  ENTER/YES │
│   ●    │        7400A Data Module      │     ●      ○        ○        ○     │
│   └────────────────────────────────────┘                                   │
└──────────────────────────────────────────────────────────────────────────┘
```

Configuring the 7400B Data Module

The factory default settings for the7400B data module are generally satisfactory.
But if you need to change them, you use a terminal device and the AT command
language commonly used by Hayes-compatible modems (7400B data modules

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have no control buttons). While a full explanation of the Hayes command set is beyond the scope of this book, the following sections sketch the basic processes involved in changing the factory settings.

Installing required configuration equipment for the 7400B

Before you can enter AT configuration commands, you must first connect a terminal or a PC with a keyboard, monitor, and terminal-emulation software to the data module. Proceed as follows.

1. Connect one end of an RS-232 cable to an RS-232, serial-communications port (often called a COM port) on the terminal or PC.

2. Connect the other end of the RS-232 cable to Port 1 of the data module

3. If you are using a PC, start your terminal emulation software.

Selecting command mode on the 7400B

When it is transmitting and receiving data, the 7400B data module is online, in data mode. To configure the 7400B, you have to switch it to command mode. Proceed as follows.

1. From the terminal keyboard, enter the escape sequence: **+++**

   The data module enters command mode and displays the **OK** result code.

Displaying the current configuration on the 7400B

1. Enter **at&v**

Enabling automatic answering on the 7400B

1. Enter **ats0=***nnn*

   where ***nnn*** is a decimal number in the range **1**-**255**.

Enabling remote operation on the 7400B

The exact configuration of any particular 7400B data module depends on what it is being used for. Consult a list of Hayes-compatible AT commands to see what is possible. The following is an example of a typical, custom configuration.

The 7400B Data Module can be used at a remote site as a dedicated service device to answer incoming data calls, send data to a remote end device, and then hang up. For example, you might wish to provide access to a printer from a remote site. The following is a typical command line you might use for setting up this operation (spaces are used here for readability, but are not required):

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1. **at &c1 &d2 q1 s0=1 &w0 &y0**

   where:

   - ■ **at** puts the modem in command mode

   - ■ **&C1** sets the Data Carrier Detect (DCD) circuit of the data module to operate according to the EIA standard

   - ■ **&D2** sets the data module to go on hook when an on-to-off transition is detected on the Data Terminal Ready (DTR) input, disconnecting the call

   - ■ **Q1** turns off the result codes that would be the normal responses of the data module to commands that it receives.

   - ■ **S0=1** turns on the automatic answer feature and causes the data module to answer an incoming data call on the first ring

   - ■ **&W0** causes the current configuration to be stored in profile **0**

   - ■ **&Y0** selects the configuration stored in profile **0** to become the current configuration each time the data module is powered on

Configuring the 7400B for remote administration

1. At the command prompt of your terminal-emulation software or terminal, enter **at&c1&d2&s1s0=1&w0&w1&y0**

   where:

   - ■ **at** puts the modem in command mode

   - ■ **&c1** tells the modem to respond to DCD

   - ■ **&d2** tells the modem to respond to DTR

   - ■ **&s1** tells the modem to respond to DSR

   - ■ **s0=1** tells the modem to auto answer on the first ring

   - ■ **&w0** tells the modem to save changes in profile **0**

   - ■ **&w1** tells the modem to save changes in profile **1**

   - ■ **&y0** tells the modem to use profile0 after a power failure

Restoring factory defaults for the 7400B

1. Enter **at&F**

Exiting command mode on the 7400B

After configuring the 7400B, exit command mode, and put the data module back online.

1. Enter **O** (capital O).

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Configuring the 7400C HSL (High-Speed Link) Data Module

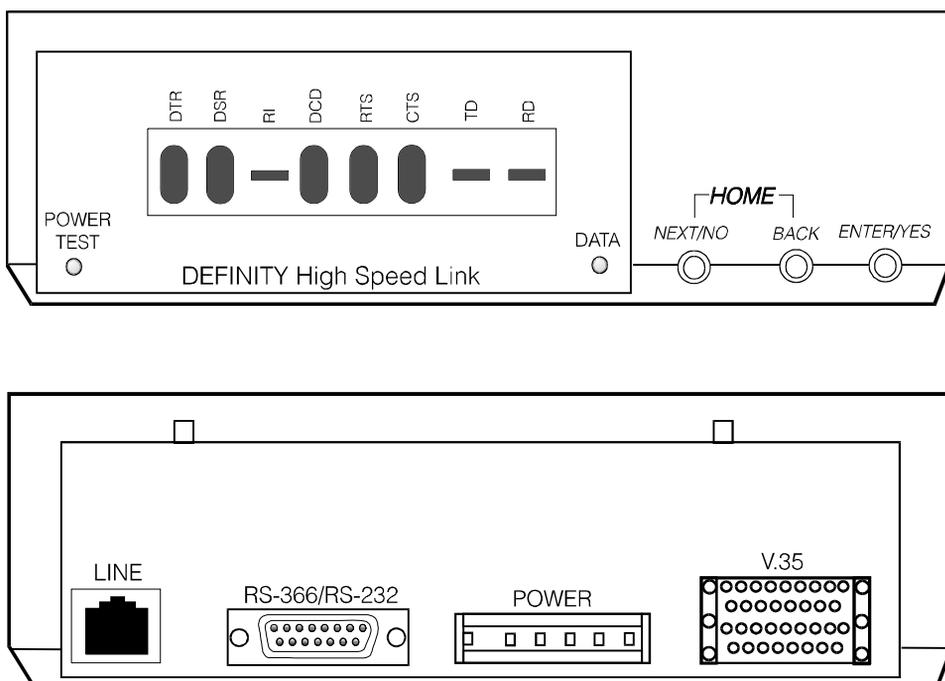[Figure 15](#) shows the front and rear of a 7400C synchronous data module.

Figure 15.   7400C Data Module (High Speed Link)

Setting the data speed for the 7400C

Proceed as follows.

1. From the HOME screen, press the **NEXT/NO** button until **SET DATA OPTS?** appears. Then press the **ENTER/YES** button.

Push the button indicated by the arrow (➜)

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2. When **SET SPEED?** appears, press the **ENTER/YES** button.

```
┌─────────────────────────────┐              ┌─────────┐
│  SET SPEED?                 │    DATA    NEXT/NO   BACK   ENTER/YES
└─────────────────────────────┘     ●         ○        ○        ➜ ●
```

Push the button indicated by the arrow (➜)

The current transmission speed appears: **SPEED = 56KBPS?** (the default) or **SPEED = 64KBPS?**

3. To keep the existing speed, press the **ENTER/YES** button.

```
┌─────────────────────────────┐              ┌─────────┐
│  SPEED = 56 KBPS?           │    DATA    NEXT/NO   BACK   ENTER/YES
└─────────────────────────────┘     ●         ○        ○        ➜ ●
```

Push the button indicated by the arrow (➜)

4. To change the existing speed, press **NEXT/NO**.

```
┌─────────────────────────────┐    ┌─────────┐
│  SPEED = 56 KBPS?           │    DATA    NEXT/NO   BACK   ENTER/YES
└─────────────────────────────┘     ●        ➜ ●       ○        ○
```

Push the button indicated by the arrow (➜)

When the **SPEED ->NewSpeed?** prompt appears, press the **ENTER/YES** button.

```
┌─────────────────────────────┐              ┌─────────┐
│  SPEED -> 64 KBPS?          │    DATA    NEXT/NO   BACK   ENTER/YES
└─────────────────────────────┘     ●         ○        ○        ➜ ●
```

Push the button indicated by the arrow (➜)

5. The **CONTINUE?** prompt appears. Press the **ENTER/YES** button.

```
┌─────────────────────────────┐              ┌─────────┐
│  CONTINUE?                  │    DATA    NEXT/NO   BACK   ENTER/YES
└─────────────────────────────┘     ●         ○        ○        ➜ ●
```

Push the button indicated by the arrow (➜)

6. If you want to set any other options, skip to the following section.

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7. Otherwise, if you want to quit now, press **NEXT/NO** until **DONE?** appears. Then press the **ENTER/YES** button.

```
┌─────────────────────────────────┐                    ┌──────────────┐
│  DONE?                           │      DATA   NEXT/NO  BACK  ENTER/YES
└─────────────────────────────────┘       ●       ○       ○      ➜ ●
```

Push the button indicated by the arrow (➜)

8. When **SAVE CHANGES?** appears, press the **ENTER/YES** button again.

```
┌─────────────────────────────────┐                    ┌──────────────┐
│  SAVE CHANGES?                   │      DATA   NEXT/NO  BACK  ENTER/YES
└─────────────────────────────────┘       ●       ○       ○      ➜ ●
```

Push the button indicated by the arrow (➜)

CHANGES SAVED appears, and the data module returns to the HOME screen.

Setting other data options for the 7400C

You can usually use the default settings for all other options. However, two exceptions are discussed below.

Selecting data inversion for 64-kbps, HDLC transmissions on restricted facilities

Data inversion is available when you are transmitting at 64 kbps over restricted facilities using HDLC-based protocols. Proceed as follows.

1. If you need compatibility with an ACCUNET MPDM, set **DATA INVERSION** to **ON** using the menus and controls as described above, in "Setting the data speed for the 7400C".

2. Otherwise, set **DATA INVERSION** to **OFF**.

3. Exit and save changes, as described above, in "Setting the data speed for the 7400C".

Configuring the 7400C for a dedicated private line

The factory default settings assume that the data module connects to a switched, dial-up line. Private lines are permanent, unswitched connections, so they have to be specially configured. Proceed as follows.

1. Set the dialing method to **MANUAL**, using the menus and controls as described above, in "Setting the data speed for the 7400C".

2. Set the answering mode (**ANS**) to **AUTO**.

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3. Set the **DTR** lead to **IGNORE**.

4. Set the **DSR** lead to **ON**.

5. Set **PERMANENT CONNECTION** to **YES**.

6. Exit and save changes, as described above, in .

Configuring the 7400D Data Module

The 7400D data module is a converted 7400A used for synchronous data transmission (Figure 16). It is a direct replacement for the MPDM. You configure the 7400D just as you would a 7400A, except that there is no SET INTERFACE option (the 7400D is an answer-only device that cannot originate calls). It supports DCE mode only. DTE modem-pooling is not supported. The PHONE and PORT2 connectors are not used.

The following table lists recommended settings for a typical installation. For the configuration procedure, see the subsequent sections.

Recommended settings for typical configurations

The table below summarizes the recommended configuration values for the 7400D data module. The procedures for setting these values follow.

Options	CMS settings	DCS settings
300	**OFF**	**OFF**
1200	**OFF**	**OFF**
2400	**OFF**	**OFF**
4800	**OFF**	**OFF**
9600	**ON (OFF for R7r)**	**ON**
19200	**OFF (ON for R7r)**	**OFF**
ANSWER	**AUTO**	**AUTO**
CI	**OFF**	**ON**
CH LEAD	**OFF**	**OFF**
CTS LEAD	**NORMAL**	**NORMAL**
DCD LEAD	**NORMAL**	**ON**
DSR LEAD	**NORMAL**	**ON**
DTR DETECT	**50 MSEC**	**50 MSEC**

Continued on next page

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Options	CMS settings	DCS settings
DTR LEAD	FOLLOW	IGNORE
RI LEAD	ON	ON
SIGLS DISC	ON	ON
TM LEAD	OFF	OFF
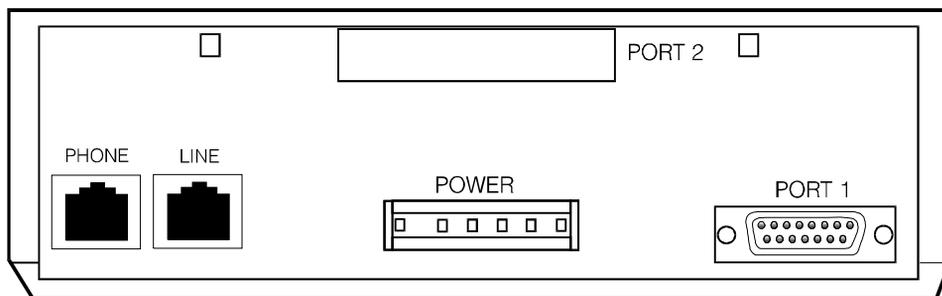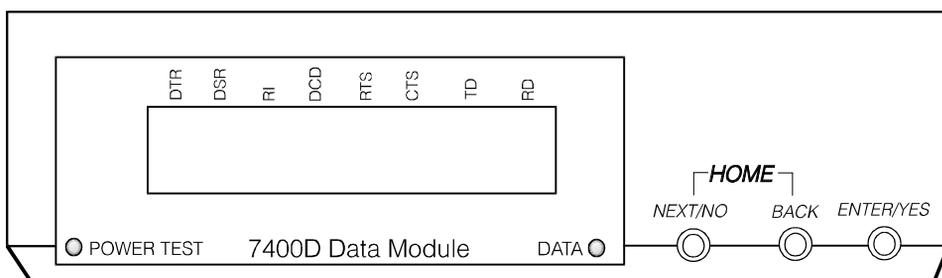
Figure 16.   7400D Data Module

Accessing the menus of the 7400D

You configure the 7400D from a set of menus.

1. To access the menus, press the **NEXT/NO** button.

Push the button indicated by the arrow (➜)

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2. When the **SET OPTIONS?** prompt appears on the LCD. Press the **NEXT/ NO** button.

```
┌─────────────────────────────┐
│ SET OPTIONS?                │       DATA   NEXT/NO   BACK   ENTER/YES
└─────────────────────────────┘        ●      → ●       ○        ○
```

Push the button indicated by the arrow (➔)

3. The **VIEW OPTIONS?** prompt appears. Press the **NEXT/NO** button.

```
┌─────────────────────────────┐
│ VIEW OPTIONS?               │       DATA   NEXT/NO   BACK   ENTER/YES
└─────────────────────────────┘        ●      → ●       ○        ○
```

Push the button indicated by the arrow (➔)

Setting speed options for the 7400D

The data speed depends on the exact application, but most require 9600 bps or, less commonly, 19200.

1. Press the **NEXT/NO** button to continue with the setup procedure.

```
┌─────────────────────────────┐
│ 0   0  —  0   0   0  —  —    │       DATA   NEXT/NO   BACK   ENTER/YES
└─────────────────────────────┘        ●      → ●       ○        ○
```

Push the button indicated by the arrow (➔)

2. The **SET OPTIONS?** prompt appears on the LCD. Press the **ENTER/YES** button.

```
┌─────────────────────────────┐
│ SET OPTIONS?                │       DATA   NEXT/NO   BACK   ENTER/YES
└─────────────────────────────┘        ●       ○        ○      → ●
```

Push the button indicated by the arrow (➔)

A series of **SET *number* SPEED?** prompts appears.

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3. Press the **NEXT/NO** button until you see the **SET *yourSpeed* SPEED?** prompt. Then press the **ENTER/YES** button.

SET *yourSpeed* SPEED?	DATA	NEXT/NO	BACK	ENTER/YES
	●	○	○	➜ ●

Push the button indicated by the arrow (➜)

4. Press the **NEXT/NO** button until you see the ***yourSpeed*=ON?** prompt. Then press the **ENTER/YES** button.

yourSpeed=ON?	DATA	NEXT/NO	BACK	ENTER/YES
	●	○	○	➜ ●

Push the button indicated by the arrow (➜)

5. If the **CONTINUE?** prompt appears, press the **ENTER/YES** button.

CONTINUE?	DATA	NEXT/NO	BACK	ENTER/YES
	●	○	○	➜ ●

Push the button indicated by the arrow (➜)

Setting the automatic-answer feature on the 7400D

You can set up the 7400A data module to automatically answer calls or you can have it ignore calls until an operator answers manually. Set up the data module for automatic answering unless specifically directed to otherwise.

1. When the **SET ANSWER?** prompt appears, press the **ENTER/YES** button.

SET ANSWER?	DATA	NEXT/NO	BACK	ENTER/YES
	●	○	○	➜ ●

Push the button indicated by the arrow (➜)

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2. When the **ANS = AUTO?** prompt appears, press the **ENTER/YES** button for most applications.

ANS = AUTO?				
	DATA	NEXT/NO	BACK	ENTER/YES
	●	○	○	➜ ●

Push the button indicated by the arrow (➜)

Configuring the RS-232 interface of the 7400D

From the front panel, you can set each pin of the RS-232 cable to meet the needs of specific applications, though in most cases, the settings below should work.

1. When the **SET CI LEAD?** prompt appears, press the **ENTER/YES** button.

SET CI LEAD?				
	DATA	NEXT/NO	BACK	ENTER/YES
	●	○	○	➜ ●

Push the button indicated by the arrow (➜)

2. Press the **NEXT/NO** button until you see the **CI = *correctSetting*?** or **CI -> *correctSetting*?** prompt. Then press the **ENTER/YES** button.

CI = *correctSetting*?				
	DATA	NEXT/NO	BACK	ENTER/YES
	●	○	○	➜ ●

Push the button indicated by the arrow (➜)

3. When the **CONTINUE?** prompt appears, press the **ENTER/YES** button.

CONTINUE?				
	DATA	NEXT/NO	BACK	ENTER/YES
	●	○	○	➜ ●

Push the button indicated by the arrow (➜)

4. When the **SET CH LEAD?** prompt appears, press the **ENTER/YES** button.

SET CH LEAD?				
	DATA	NEXT/NO	BACK	ENTER/YES
	●	○	○	➜ ●

Push the button indicated by the arrow (➜)

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5. Press the **NEXT/NO** button until you see the **CH = *correctSetting*?** or **CH -> *correctSetting*?** prompt. Then press the **ENTER/YES** button.

```
┌─────────────────────────────┐          ┌────────┐
│ CH = correctSetting?        │   DATA  NEXT/NO   BACK  ENTER/YES
└─────────────────────────────┘    ●      ○        ○      ➜ ●
```

Push the button indicated by the arrow (➜)

6. When the **CONTINUE?** prompt appears, press the **ENTER/YES** button.

7. When the **SET CTS LEAD?** prompt appears, press the **ENTER/YES** button.

```
┌─────────────────────────────┐          ┌────────┐
│ SET  CTS LEAD?              │   DATA  NEXT/NO   BACK  ENTER/YES
└─────────────────────────────┘    ●      ○        ○      ➜ ●
```

Push the button indicated by the arrow (➜)

8. Press the **NEXT/NO** button until you see the **CTS = *correctValue*?** or **CTS -> *correctValue*?** prompt. Then press the **ENTER/YES** button.

```
┌─────────────────────────────┐          ┌────────┐
│ CTS ->  correctValue?       │   DATA  NEXT/NO   BACK  ENTER/YES
└─────────────────────────────┘    ●      ○        ○      ➜ ●
```

Push the button indicated by the arrow (➜)

9. When the **CONTINUE?** prompt appears, press the **ENTER/YES** button.

10. When the **SET DCD LEAD?** prompt appears, press the **ENTER/YES** button.

```
┌─────────────────────────────┐          ┌────────┐
│ SET  DCD LEAD?              │   DATA  NEXT/NO   BACK  ENTER/YES
└─────────────────────────────┘    ●      ○        ○      ➜ ●
```

Push the button indicated by the arrow (➜)

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11. Press the **NEXT/NO** button until you see the **DCD = *correctValue*?** or **DCD -> *correctValue*?** prompt. Then press the **ENTER/YES** button.

```
┌─────────────────────────────┐
│ DCD = correctValue?         │        DATA   NEXT/NO   BACK   ENTER/YES
└─────────────────────────────┘         ●        ○        ○       → ●
```

Push the button indicated by the arrow (➜)

12. When the **CONTINUE?** prompt appears, press the **ENTER/YES** button.

13. When the **SET DSR LEAD?** prompt appears, press the **ENTER/YES** button.

```
┌─────────────────────────────┐
│ SET  DSR LEAD?              │        DATA   NEXT/NO   BACK   ENTER/YES
└─────────────────────────────┘         ●        ○        ○       → ●
```

Push the button indicated by the arrow (➜)

14. Press the **NEXT/NO** button until you see the **DSR = *correctValue*?** or **DSR -> *correctValue*?** prompt. Then press the **ENTER/YES** button.

```
┌─────────────────────────────┐
│ DSR -> correctValue?        │        DATA   NEXT/NO   BACK   ENTER/YES
└─────────────────────────────┘         ●        ○        ○       → ●
```

Push the button indicated by the arrow (➜)

15. When the **CONTINUE?** prompt appears, press the **ENTER/YES** button.

16. When the **SET DTR DETECT?** prompt appears, press the **ENTER/YES** button.

```
┌─────────────────────────────┐
│ SET  DTR DETECT?            │        DATA   NEXT/NO   BACK   ENTER/YES
└─────────────────────────────┘         ●        ○        ○       → ●
```

Push the button indicated by the arrow (➜)

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17. Press the **NEXT/NO** button until you see the **DTR = *correctValue* MSEC?** or **DTR -> *correctValue* MSEC?** prompt. Then press the **ENTER/YES** button.

DTR = *correctValue* MSEC?	DATA	NEXT/NO	BACK	ENTER/YES
	●	○	○	➜ ●

Push the button indicated by the arrow (➜)

18. When the **CONTINUE?** prompt appears, press the **ENTER/YES** button.

19. When you see the **SET DTR LEAD?** prompt, press the **ENTER/YES** button.

SET DTR LEAD?	DATA	NEXT/NO	BACK	ENTER/YES
	●	○	○	➜ ●

Push the button indicated by the arrow (➜)

20. Press the **NEXT/NO** button until the **DTR = *correctValue*?** or **DTR -> *correctValue*?** prompt appears. Then press the **ENTER/YES** button.

DTR = *correctValue*?	DATA	NEXT/NO	BACK	ENTER/YES
	●	○	○	➜ ●

Push the button indicated by the arrow (➜)

21. When the **CONTINUE?** prompt appears, press the **ENTER/YES** button.

22. When the **SET LL LEAD?** prompt appears, press the **NEXT/NO** button to skip this setting.

SET LL LEAD?	DATA	NEXT/NO	BACK	ENTER/YES
	●	➜ ●	○	○

Push the button indicated by the arrow (➜)

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23. When the **SET LL DETECT?** prompt appears, press the **NEXT/NO** button to skip this setting.

```
┌─────────────────────────────┐
│  SET  LL DETECT?            │         DATA   NEXT/NO   BACK   ENTER/YES
└─────────────────────────────┘          ●     ➜ ●        ❍         ❍
```

   Push the button indicated by the arrow (➜)

24. When the **SET RI LEAD?** prompt appears, press the **ENTER/YES** button.

```
┌─────────────────────────────┐
│  SET  RI LEAD?             │          DATA   NEXT/NO   BACK   ENTER/YES
└─────────────────────────────┘          ●       ❍        ❍       ➜ ●
```

   Push the button indicated by the arrow (➜)

25. Press the **NEXT/NO** button until the **RI = *correctValue*?** or **RI -> *correctValue*?** prompt appears. Then press the **ENTER/YES** button.

```
┌─────────────────────────────┐
│  SET  RI = ON?             │          DATA   NEXT/NO   BACK   ENTER/YES
└─────────────────────────────┘          ●       ❍        ❍       ➜ ●
```

   Push the button indicated by the arrow (➜)

26. When the **CONTINUE?** prompt appears, press the **ENTER/YES** button.

27. When the **SET RL LEAD?** prompt appears, press the **NEXT/NO** button to skip this setting.

```
┌─────────────────────────────┐
│  SET  RL LEAD?             │          DATA   NEXT/NO   BACK   ENTER/YES
└─────────────────────────────┘          ●     ➜ ●        ❍         ❍
```

   Push the button indicated by the arrow (➜)

28. When the **SET SIGLS DISC?** prompt appears, press the **ENTER/YES** button.

```
┌─────────────────────────────┐
│  SET SIGLS DISC?           │          DATA   NEXT/NO   BACK   ENTER/YES
└─────────────────────────────┘          ●       ❍        ❍       ➜ ●
```

   Push the button indicated by the arrow (➜)

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29. Press the **NEXT/NO** button until the **SIGLS DISC = *correctValue*?** or
    SIGLS DISC -> *correctValue*? prompt appears. Then press the **ENTER/
    YES** button.

SIGLS DISC = ON?	DATA	*NEXT/NO*	*BACK*	*ENTER/YES*
	●	❍	❍	➜ ●

Push the button indicated by the arrow (➜)

30. When the **CONTINUE?** prompt appears, press the **ENTER/YES** button.

31. When the **SET TM LEAD?** prompt appears, press the **ENTER/YES**
    button.

SET TM LEAD?	DATA	*NEXT/NO*	*BACK*	*ENTER/YES*
	●	❍	❍	➜ ●

Push the button indicated by the arrow (➜)

32. Press the **NEXT/NO** button until the **TM = OFF?** or **TM -> OFF?** prompt
    appears, then press the **ENTER/YES** button.

TM = OFF?	DATA	*NEXT/NO*	*BACK*	*ENTER/YES*
	●	❍	❍	➜ ●

Push the button indicated by the arrow (➜)

33. When the **DONE?** prompt appears, press the **ENTER/YES** button.

DONE?	DATA	*NEXT/NO*	*BACK*	*ENTER/YES*
	●	❍	❍	➜ ●

Push the button indicated by the arrow (➜)

34. When the **SAVE CHANGES?** prompt appears, press the **ENTER/YES**
    button.

SAVE CHANGES?	DATA	*NEXT/NO*	*BACK*	*ENTER/YES*
	●	❍	❍	➜ ●

Push the button indicated by the arrow (➜)

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The **CHANGES SAVED** message flashes on screen, and you return to the
HOME screen. The data module is now configured.

Configuring the 8400B Plus Data Module

Figure 17 shows the rear of a 8400B plus asynchronous data module. The unit
provides integrated voice and data communications over standard, 2-wire,
twisted-pair circuits within 2000 ft. of a G3V4. The unit can emulate a Hayes-
compatible interface for standard personal computer (PC) communication. The
options for the 8400B Plus are set from the rear panel interface. Refer to
DEFINITY Communications System User's Guide, 555-020-709, for procedures.

PHONE   LINE
        POWER

8400b RBP 041196
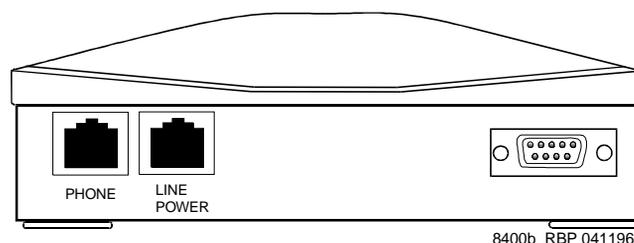
Figure 17.   8400B Plus Data Module

Installing required configuration equipment for the 8400B

Before you can enter configuration commands, you must first connect a terminal
or a PC with a keyboard, monitor, and terminal-emulation software to the data
module. Proceed as follows.

1. Connect one end of an RS-232 cable to an RS-232, serial-communications
   port (often called a COM port) on the terminal or PC.

2. Connect the other end of the RS-232 cable to Port 1 of the data module

3. If you are using a PC, start your terminal emulation software.

Selecting 8400B options

On the 8400B data module, all configuration options are enabled by default. You
configure the 8400B by disabling options with a code that you enter in a memory
register (S24) in the data module. Consult the table below, and perform the steps
that follow.

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Table 12. Codes for disabling default settings of the 8400B data module

Default setting	Disabling code
With Telephone	**1**
US Companding	**2**
Telephone Provides Dialing	**4**
Disable Data Metering Feature	**16**
Immediate Speakerphone Activation	**32**
Automatic Speakerphone Activation	**64**
Disable Busyout During Local Loopback Test	**128**

Proceed as follows.

1. Calculate an option-selection value using Figure 12, "Codes for disabling default settings of the 8400B data module". Add up the disabling codes for all options that you wish to disable.

   For example, if you turned off **With Telephone**, **US Companding**, **Disable Data Metering Feature**, the selection code would be:

   1 + 2 + 16 = 19

2. Check the current data-module setting by entering **ATS24?**.

3. If the current value does not match the selection value you calculated, enter **ATS24=*nnn***, where ***nnn*** is the selection value you calculated.

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ExpressRoute 1000 Data Module

You can substitute an ExpressRoute 1000 data module for the 8400B data module. Both DCP and ISDN-BRI connections are possible. Figure 18 shows typical connections.

⚠ CAUTION:

In DC-powered cabinet installations, a 105C Isolator adapter is required when connecting equipment to a data module.
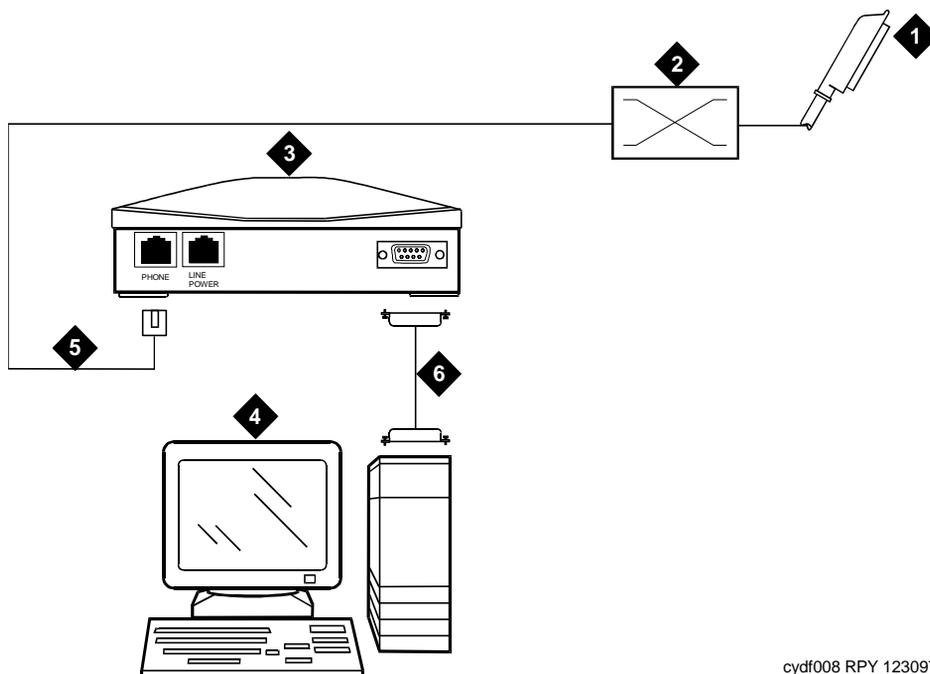
cydf008 RPY 123097

1. To BRI circuit pack or DCP digital line circuit pack
2. Main distribution frame (MDF)
3. ExpressRoute 1000 data module
4. PC administration terminal
5. Modular line cord
6. M25B (25-Pin RS-232) cable

Figure 18. Typical ExpressRoute 1000 Data Module Connections

Administering the DEFINITY ECS for Data Modules

You have to administer each data module that you attach to the system.

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➡ **NOTE:**
Only the basic procedure is covered here. For the full range of options, see the *DEFINITY Enterprise Communications Server Release 7 Administrator's Guide*.

1. Locate an available port. At the DEFINITY ECS administration console, enter

   list config port

```
list configuration port-network                                    Page   1

                        SYSTEM CONFIGURATION

Board                                                    Assigned Ports
Number    Board Type              Code     Vintage    u=unassigned t=tti p=psa

01A01     POOLED MODEM            TN758    000002     u   u   u   u
01A02     DATA LINE               TN726B   000002     u   u   u   u   u   u   u   u
01A03     AUXILIARY TRUNK         TN763D   000005     01  02  u   u
01A04     ANNOUNCEMENT            TN750C   000006     01  02  03  04  05  06  07  08
                                                      09  10  11  12  13  14  15  16
                                                      u
01A05     DIGITAL LINE            TN2181   000007     01  02  u   u   u   u   u   u
                                                      u   u   u   u   u   u   u   u
01A07     CO TRUNK                TN2138   000001     u   u   u   u   u   u   u   u
01A08     DIGITAL LINE            TN754B   000002     01  02  03  04  05  06  07  08
01A09     CONTROL-LAN             TN799    000001     01  02  u   u   u   u   u   u

           press CANCEL to quit --  press NEXT PAGE to continue
```

Screen 1.   Typical system-configuration listing

2. Locate an unassigned port on a suitable circuit pack, and make a note of the corresponding port number.

   The port number is the **Board Number**, *ccCss* (where *cc* is the two-digit cabinet number, *C* is the single-character carrier identifier, and *ss* is the two digit slot number) followed by the next two-digit number, *pp*, in the sequence in the **Assigned Ports** fields at the right side of the form: *ccCsspp*.

   For example, in the listing above, the next available port address for the TN2181 digital line circuit pack would be **01A0503**.

3. From the G3V4 administration console, open a new data-module form by typing

   add data-module next

   The system automatically assigns the next available extension number to the data module.

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```
add data-module next                                         Page   1 of   1
                             DATA MODULE

   Data Extension: 2002          Name: _____   BCC: 2
             Type: pdm            COS: 1       Remote Loop-Around Test? n
             Port: █_____        COR: 1          Secondary data module? n
              ITC: restricted      TN: 1                  Connected To: dte


ABBREVIATED DIALING
  List1: _____

SPECIAL DIALING OPTION: _____

ASSIGNED MEMBER ( Station with a data extension button for this data module )

         Ext     Name
      1:
```

Screen 2.   Typical data-module form

4. In the **Port** field, enter the seven-digit port address that you wrote down in step 2, above.

5. If you installed a telephone on the data module, enter the extension number and station name for this telephone in the **ASSIGNED MEMBER** part of the form.

6. Press the F3 key to close the form and save the changes.

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4 Data Modules and Asynchronous Data Units
Asynchronous Data Units (ADUs)   73

Asynchronous Data Units (ADUs)

ADUs are used with Data Line circuit packs to connect peripherals, such as printers, data terminals, fax equipment, and call-detail recording equipment to the G3V4. Figure 19 shows a typical Z3A2 ADU assembly (without a cable).

- Add a female-to-male EIA-232 cable (shown) to make a Z3A1 ADU assembly.

- Add a female-to-female EIA-232 cable (not shown) to make a Z3A4 ADU assembly.

adu KLC 053196

1. Z3A2 ADU

2. 25-pin male D-connector (EIA-232-D) to DTE

3. Wall jack connector (to data line circuit pack or analog line circuit pack or equivalent)

4. Telephone jack (to analog telephone)

5. Originate/disconnect jack

6. Female connector on EIA-232-D cable

7. Male connector on EIA-232-D cable

Figure 19.   Z3A2 Asynchronous Data Unit (ADU)

Refer to the tables in Appendix A, "Connector and Cable Pinout Charts", for the pinouts of the TN727 data line circuit pack and TN2183 analog line circuit pack (or equivalents) in the cabinet.

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Hardware required when configuring modems   75

External Modems

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The following section assumes that you are using one of the recommended modems. However, any locally obtained, type-approved external modem should work. Contact your Lucent Technologies representative for more information.

Hardware required when configuring modems

To configure many modems, you use the Hayes-compatible AT command set. Before you can enter AT configuration commands, you must first connect a terminal or a PC with a keyboard, monitor, and terminal-emulation software to the modem. Proceed as follows.

1. Connect one end of an RS-232 cable to an RS-232, serial-communications port (often called a COM port) on the terminal or PC.

2. Connect the other end of the RS-232 cable to the modem.

3. If you are using a PC, start your terminal emulation software.

PARADYNE COMSPHERE 3715

You configure COMSPHERE 3715 modems using the Hayes-compatible AT commands common to many modems. For instructions on how to physically connect the modem and enter the commands listed in the instructions below, see the documentation that came with the modem.

Configuring the 3715 for CMS

The instructions below set up the modem for use in DEFINITY CMS (other configurations may work as well).

1. From the commandline prompt of your terminal emulation software or terminal, enter **at&f**.

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This loads factory default configuration options into active memory. If all is well, the modem replies **OK**.

2. Enter **at%b9600**.

   This sets the data speed to 9600 kbps. If all is well, the modem replies **OK**.

3. Enter **atq1&r0&S1\d1&w0**.

   This disables result codes, sets the RTS (Request To Send), DSR (Data Set Ready), CTS (Clear To Send) signals action to standard RS-232 operation, and saves the changes to profile **0**. If all is well, the modem replies **OK**.

Configuring the 3715 for modem pooling

The instructions below set up the modem for use in a DEFINITY modem pool (other configurations may work as well).

1. From the commandline prompt of your terminal emulation software or terminal, enter **at &f**.

   This loads factory default configuration options into active memory. If all is well, the modem replies **OK**.

2. Enter **at m0 x7 y0 &s1 /d1**.

   If all is well, the modem replies **OK**.

3. Enter **at e0 v0 c2=128 s7=60 f10=100 &w0 &y0**.

   If all is well, the modem replies **OK**.

PARADYNE COMSPHERE 3810 Plus and 3811 Plus

1. Install the modem as described in the vendor's documentation.

2. Attach a terminal or a PC with terminal emulation software, as described in the vendor's documentation.

3. From the terminal, enter the following AT command string:

   AT&F&D2&S4\D3S2=128x7V2S7=60S85=1

4. Then enter the following command string:

   ATY0S10=100S78=2M0E0\N1&W

   The modem is now configured.

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Setting Up the PARADYNE COMSPHERE 3910

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Setting Up the PARADYNE COMSPHERE 3910

You configure COMSPHERE 3910 modems using a front button panel or Hayes-compatible AT commands. For instructions on how to physically connect the modem and general configuration instructions, see the documentation that came with the modem. This document describes configuring the 3910 for particular, G3V4 adjuncts.

modf3150 KLC 030899
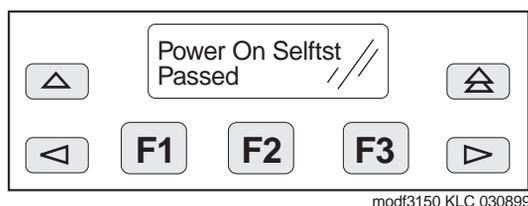
Figure 20.   COMPSPHERE 3910 modem, front panel

Configuring the COMSPHERE 3910 for CMS

The COMSPHERE 3910 modem may be used as the CMS Remote Console Modem or as a device that provides serial connectivity to CMS through the Network Terminal Server (NTS). The instructions below set up the modem for use in DEFINITY CMS (other configurations may work as well).

Understanding the modem controls and displays

You control the modem by using the buttons on the front panel of the modem to change menus and select menu items displayed on a small LCD screen. The buttons do the following:

> **NOTE:**
> The arrow and function buttons described in this section are located on the front panel of the modem, not on a PC keyboard or terminal.

- **Single Up Arrow** moves up one level in the menu tree.

- **Double Up Arrow** moves to the top level of the menu tree.

- **Left Arrow** moves to the previous choice at the current level of the menu tree.

- **Right Arrow** moves to next choice at the current level of the menu tree.

- **F1** selects the choice displayed above **F1**.

- **F2** selects the choice displayed above **F2**.

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Setting Up the PARADYNE COMSPHERE 3910

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- **F3** selects the choice displayed above **F3**.

For our purposes, the on-screen prompt *strap group* indicates a collection of related configuration settings.

Modem menus can be confusing because you only get to see one or two headings or items at a time. The modem also has a limited set of command words, so many of them have to be used more than once, and commands seem to be repeating themselves. This can be confusing. To avoid missing a step, check the values on the display after you enter a command, and make sure the result agrees with that listed in the corresponding step in the instructions.

Creating an editable configuration set

It is generally easiest to configure the modem by starting from the default, factory configuration. You then change only those settings that are different for a G3V4 installation.

Copying factory default settings

Make a copy of the default, factory configuration using the following procedure.

1. On the front panel of the COMSPHERE 3910, press the **F2** button to select **Configure**.

   The **Ld EditArea frm >** prompt appears.

2. Press the right-arrow button four times.

   The **Factory** menu item appears.

3. Press the **F1** button to select **Factory**.

   The **Ld Fact Preset: >** prompt appears.

4. Press the right-arrow button.

5. Press **F2** to select **Async_Dial**.

6. Press **F3** to select **Save**.

   The **Sav EditArea to >** prompt appears.

7. Press **F1** to save configuration changes to the **Active(Saved)** storage area.

   Since you are changing the active area to a new set of options— **Factory/ Async_Dial**—the modem automatically runs a power-on self-test. The **Idle:19.2** and **Status Configure** messages appear.

8. To return to the top-level menu at any time, press the double up-arrow button.

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Loading the copied default settings

Load the default settings so that you can edit them for use with CMS. Proceed as follows.

1. On the front panel of the COMSPHERE 3910, press **F2** to select **Configure**.

   The **Ld EditArea frm >** prompt appears.

2. Press the right-arrow button once.

   The **Active(Saved)** prompt appears.

3. Press **F1** to select **Choose Function**.

4. Press **F1** to select **Edit**.

   The **Edit StrapGroup >** prompt appears.

Configuring the DTE interface

Set the data speed and enable standard, RS-232 communications settings. Proceed as follows.

Configuring basic, RS-232 handshaking

Start by selecting values for the basic parameters of serial data communications, mode, speed/rate, framing, and error correction (parity). The modem uses these parameters when it negotiates a connection with another RS-232 device, a process called *handshaking*.

1. From the **Edit StrapGroup >** prompt, press **F1** to select **DTE_Interface**.

   The **Async/Sync Mode** menu heading appears.

2. Press **F1** to select **Nxt**.

   The **Async DTE Rate** menu heading appears.

3. Press the right-arrow button five times.

   The **9600** menu item appears.

4. Press **F2** to select **9600**.

5. Press **F1** to select **Nxt**.

   The **Asyn #Data Bits (8)** menu heading appears.

6. Press **F1** to select **Nxt**.

   The **Asyn Parity Bit (None)** menu heading appears.

7. Press **F1** to select **Nxt**.

   The **Asyn #Stop Bits (1)** menu heading appears.

8. Press **F1** to select **Nxt**.

   The **DTR Action** menu heading appears.

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Configuring the RS-232 Ready signals, DTR and DSR

Next, configure the Data Terminal Ready and Data Set Ready leads of the RS-232 interface.

1. From the **DTR Action** menu heading, press the right-arrow button once.

   The **Stndrd_RS232** menu item appears.

2. Press **F2** to select **Stndrd_RS232**.

3. Press **F1** to select **Nxt**.

   The **DSR Control** menu heading appears.

4. Press the right-arrow button once.

   The **Stndrd_RS232** menu item appears.

5. Press **F2** to select **Stndrd_RS232**.

6. Press **F1** to select **Nxt**.

   The **RTS Action** menu heading appears.

Configuring RS-232 Send signals, RTS and CTS

Next you set the parameters that the modem uses to offer and accept data, Request To Send (RTS) and Clear To Send (CTS).

1. From the **RTS Action** menu heading, press the right-arrow button once.

   The **Stndrd_RS232** menu item appears.

2. Press **F2** to select **Stndrd_RS232**.

3. Press **F1** to select **Nxt**.

   The **CTS Control** menu heading appears.

4. Press the right-arrow button once.

   The **Stndrd_RS232** menu item appears.

5. Press **F2** to select **Stndrd_RS232**.

6. Press **F1** to select **Nxt**.

   The **RTS/CTS Delay (0 msec)** menu heading appears.

Configuring various control features

Now set the Line Signal Detect (LSD, also known as DCD or Data Carrier Detect) control and rate controls.

1. Press **F1** to select **Nxt**.

   The **LSD Control (Stndrd_RS232)** menu heading appears.

2. Press **F1** to select **Nxt**.

   The **CT111_Rate Cntl (Disable)** menu heading appears.

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3. Press **F1** to select **Nxt**.

   The **DTE_Rate=VF (Disable)** menu heading appears.

4. Press **F1** to select **Nxt**.

   The **Extend Main Ch. (Disable)** menu heading appears.

Finishing configuration of the DTE interface

1. Press **F1** select **End**.

   The **Edit StrapGroup >** prompt appears.

Configuring the DTE Dialer

Now define the command interface that the modem should use when dialing. The
RS-232 interface uses control characters to pass communications commands
and control the transmission. These are user-configurable. We need to disable
the result-code options while retaining the default values for the other control
characters. Proceed as follows.

Opening the DTE Dialer menus

1. From the **Edit StrapGroup >** prompt, press the right-arrow button once.

   The **DTE Dialer** menu heading appears.

2. Press **F1** to select **DTE_Dialer**.

   The **DTE Dialer Type (AT)** menu heading appears.

Skipping to the result-code options

To reach the options we need to set, we have to skip over a number of other
options without making changes. Proceed as follows.

1. From the **DTE Dialer Type (AT)** menu heading, press **F1** to select **Nxt**.

   The **AT Escape Char** menu heading appears.

2. Press **F1** to select **Nxt**.

   The **Escape GuardTim** menu heading appears.

3. Press **F1** to select **Nxt**.

   The **BreakForceEscap** menu heading appears.

4. Press **F1** to select **Nxt**.

   The **CommandCharEcho** menu heading appears.

5. Press **F1** to select **Nxt**.

   The **CarriageRtn Char** menu heading appears.

6. Press **F1** to select **Nxt**.

   The **Backspace Char** menu heading appears.

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7. Press **F1** to select **Nxt**.

   The **Linefeed Char** menu heading appears.

8. Press **F1** to select **Nxt**.

   The **ResultCodes (Enable)** menu heading appears.

Disabling result codes

We have reached the options that we need to change. Proceed as follows.

1. From the **ResultCodes (Enable)** menu heading, press the right-arrow button once.

   The **Disable** menu item appears.

2. Press **F2** to select **Disable**.

3. Press **F1** to select **Nxt**.

   The **ExtendResltCode (Enable)** menu heading appears.

4. Press the right-arrow button once.

   The **Disable** menu item appears.

5. Press **F2** to select **Disable**.

Exiting the DTE Dialer menu

Skip over the remaining menu headings. Proceed as follows.

1. Press **F1** to select **Nxt**.

   The **ResultCode Form** menu heading appears.

2. Press **F1** to select **Nxt**.

   The **AT Cmnd Mode** menu heading appears.

3. Press **F1** to select **End**.

   The **Edit StrapGroup >** menu heading appears.

Configuring the Data Line

Set the line speed and accept the default values for the other settings. Proceed as follows.

Opening the dial line menu

1. From the **Edit StrapGroup >** menu heading, press the right-arrow button twice.

   The **Dial_Line** menu item appears.

2. Press **F1** to select the **Dial_Line** menu heading.

   The **Dial Line Rate** menu heading appears.

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Setting the line rate

1. From the **Dial Line Rate** menu heading, press the right-arrow button four times.

   The **9600(V32b)** menu item appears.

2. Press **F2** to select **9600(V32b)**.

Exiting the dial line menu

Skip over the remaining menu headings. Proceed as follows.

1. Press **F1** to select **Nxt**.

   The **V32bis Automode (Enable)** menu heading appears.

2. Press **F1** to select **Nxt**.

   The **V32bis Autorate (Enable)** menu heading appears.

3. Press **F1** to select **Nxt**.

   The **Dial Tx Level (Permissv (-9))** menu heading appears.

4. Press **F1** to select **Nxt**.

   The **V22b Guard Tone (Disable)** menu heading appears.

5. Press **F1** to select **Nxt**.

   The **V32bis Train (Long)** menu heading appears.

6. Press **F1** to select **End**.

   The **Edit StrapGroup >** prompt appears.

Saving the new configuration

You must save the configuration changes you have made before you can use them.

1. From the **Edit StrapGroup >** prompt, press the single up-arrow button once.

   The **Choose Function**, **Edit**, and **Save** menu headings appear.

2. Press **F3** to select **Save**.

   The **Save EditArea to >** prompt appears.

3. Press **F1** to select **Active(Saved)**.

   The **Command Complete** message appears.

4. Press the single up-arrow button again.

   The **Save EditArea to >** prompt appears.

5. Press the right-arrow button once to select **Customer 1**.

6. Press **F1** to save changes to the **Customer 1** storage area.

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The **Command Complete** message appears.

7. Press the double up-arrow button once.

   The **Idle:9600** and **Status Configure** messages appear. When you power off the modem, it should return to this state.

Checking the status of the COMSPHERE 3910 modem

To check the status of the COMSPHERE 3910 modem at any time, proceed as follows.

1. From the topmost menu, select the **Status** menu item.

Setting Up the U.S. Robotics Model 839 for DEFINITY ECS R7csi

The U.S. Robotics Model 839 external modem is recommended for R7csi systems. For instructions on how to physically connect it and for general configuration instructions, see the documentation that came with the modem. This document describes configuring the Model 839 for particular, G3V4 adjuncts.

All configuration is done via hardware switches. Proceed as follows.

1. Set the DIP switches on the modem to match the settings listed in the table below (for switch locations, consult the documentation that came with the modem).

Table 13.   U.S. Robotics Model 839 External Modem Switch Settings

Switch	Setting	Function
1	OFF (Up)	DTR (Data Terminal Ready) override
2	OFF (Up)	Result codes
3	ON (Down)	Result codes
4	OFF (Up)	Keyboard command echo
5	ON (Down)	Auto answer
6	OFF (Up)	CD (Carrier Detect) override
7	OFF (Up)	Power-on and ATZ reset software defaults
8	ON (Down)	AT command recognition

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5 External Modems
Administering the G3V4 for Modems   85

Administering the G3V4 for Modems

You have to administer each modem that you attach to the system.

⇒ **NOTE:**
Only the basic procedure is covered here. For the full range of options, see the G3V4 *R7 Administrator's Guide*.

Accessing the Administration Form

1. Open the modem-administration form. At the management terminal, enter **change system-parameters maintenance**.

2. Scroll to page 3 of the form.

Identifying the modem

1. On the modem-administration form, set the **Modem Connection:** field to **external** (it should be set to **none** if no modem is installed).

   This field generates alarms if it is not administered correctly. It cannot be set to **none** if **Alarm Origination** is activated.

2. Set the **Modem Name:** field to a unique, 20-character, alphanumeric identifier.

Setting data-transmission parameters

1. On the modem-administration form, set the **Data Bits:** field to **8** (the default).

2. Set the **Parity:** field to **none** (the default).

3. Set the **RTS/CTS Enabled:** field to **&H1** (unless you have an Intel modem, in which case set it to **\Q3**).

   This enables flow-control.

4. Set the **Asynchronous Data Mode:** field to **&M0**, the default (unless you have an Intel modem, in which case set it to **\J1**).

5. Set the **DTE Auto-Data Speed:** field to **S90=1** (unless you have an Intel modem, in which case set it to **&M0&Q0**).

   This lets the modem automatically adjust the data speed to match the requirements of the remote equipment.

6. Set the **Disable Data Compression:** field to **%C0** (unless you have an Intel modem, in which case set it to **H0%C0**, or a U.S. Robotics 839, in which case the option is not available).

   This disables V.42bis and MNP Class-5 data compression.

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5　External Modems
　　Administering the G3V4 for Modems　　　　　　　　　　　　　　　　　　　　　86

7. Set the **Enable Error Control:** field to **\N5** (unless you have an Intel modem, in which case set it to **\N3**).

   This enables LAPM and MNP error control.

Setting dialing parameters

1. Set the **Auto-Answer Ring Number:** field to **S0=10**.

   This specifies the number of rings that the modem waits before answering an incoming call.

2. Set the **Dial Type:** field to **T** for tone dialing (the default) or **P** for pulse dialing.

3. Set the **Adjustable Make/Break Ratio:** field to **&P0** for the United States and Canada, **&P1** for the United Kingdom and Hong Kong.

   Controls the make/break ratios of pulses and DTMF dialing. The United States and Canada use 39% make and 61% break. The United Kingdom and Hong Kong use 33% make and 67% break

4. Set the **Dial Command:** field to **D**.

   Specifies standard dialing command.

Setting additional, modem-specific parameters

1. Put any remaining AT configuration commands required by your modem in the **Misc. Init. Param:** field.

Exiting the form and saving the changes

1. When you are finished, press ENTER.

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6 Modem Pooling
About Modem Pooling   87

Modem Pooling

6

About Modem Pooling

Modem pooling lets data endpoints draw on a group of shared modems and
analog lines, as needed. Endpoints do not require their own, dedicated modems
and lines.

Each member of the modem pool (called a "conversion resource") consists of

- A data module that converts between the G3V4 data format and the
  format specified by the RS-232 protocol

- A modem that converts RS-232 digital data to an analog signal

- An analog telephone line

G3V4 automatically invokes modem pooling when a digital data terminal calls or
is called by any of the following:

- An analog trunk

- A DS1 trunk using robbed-bit signalling

- A DS1 trunk using common-channel signalling with voice communications

The illustration below represents a typical modem-pooling arrangement.

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6 Modem Pooling
Equipment required   88
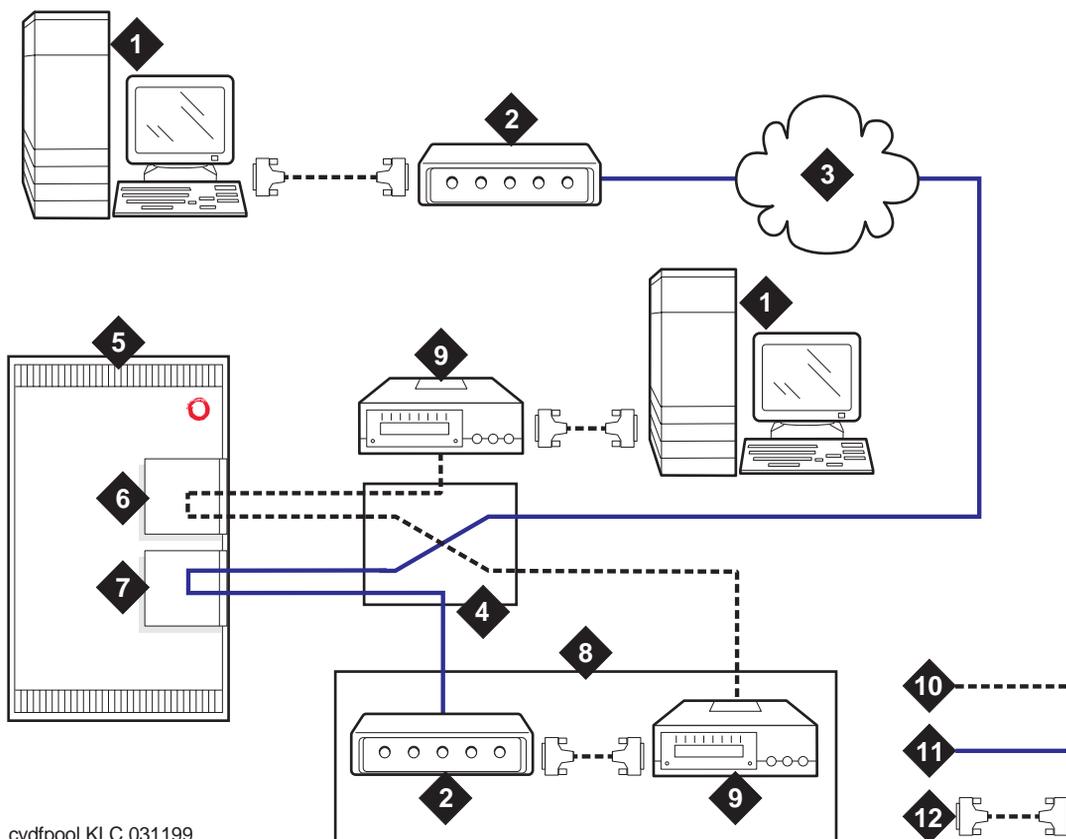
cydfpool KLC 031199

1. PC or other DTE	5. G3V4	9. Data module
2. Modem	6. Digital circuit pack	10. Digital connection
3. Public telephone network	7. Analog circuit pack	11. Analogconnection
4. Cross-connect field	8. Modem pool	12. 25-pin RS-232 cable

Figure 21.   Principal components of a modem pooling system

Equipment required

To integrate a data module, modem, and analog-line interface into a single conversion resource, you need the following components.

- Port on a pooled-modem circuit pack

- 104A connector block

- Modem with D8W cable

- Data module with D8W cable

- Data-module power supply

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6 Modem Pooling
Other requirements

89

■ Male/male 25-pin RS-232 (M25B) cable

■ 103A connector block

Other requirements

You should be familiar with the installation procedures for data modules and modems. See Chapter 4, "Data Modules and Asynchronous Data Units", and Chapter 5, "External Modems".

Setting Up the Modem Pool

For each conversion resource in the modem pool, proceed as follows.

1. Assign ports for the modem-pooling circuit packs.

2. Physically install the modem-pooling circuit packs.

3. For each modem in the pool, install a data module as DTE.

4. For each data module in the pool, install and configure a modem.

5. Connect each modem to its corresponding data module using an RS-232 cable.

Administering the DEFINITY switch for Modem Pooling

1. At the system prompt, type **add data-module next**, and press ENTER.

2. In the **Type** field, type **pdm**.

3. In the **Port** field, type **x**.

4. In the **Connected to** field, type **dte**, and press ENTER.

5. In the **Connected** field, type **dte**, and press ENTER.

6. Type **add station next**, and press ENTER.

7. Type **2500** in the **Type** field.

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6 Modem Pooling
Administering the DEFINITY switch for Modem Pooling   90

PassageWay Adapter (2- or 4-Wire)

7

The PassageWay adapter lets you connect a µ-Law digital telephone and a PC to the system via a single 2- or 4-wire DCP digital port. See Figure 22. The adapter requires 1 watt at about -48 VDC, from a bulk or individual power supply.
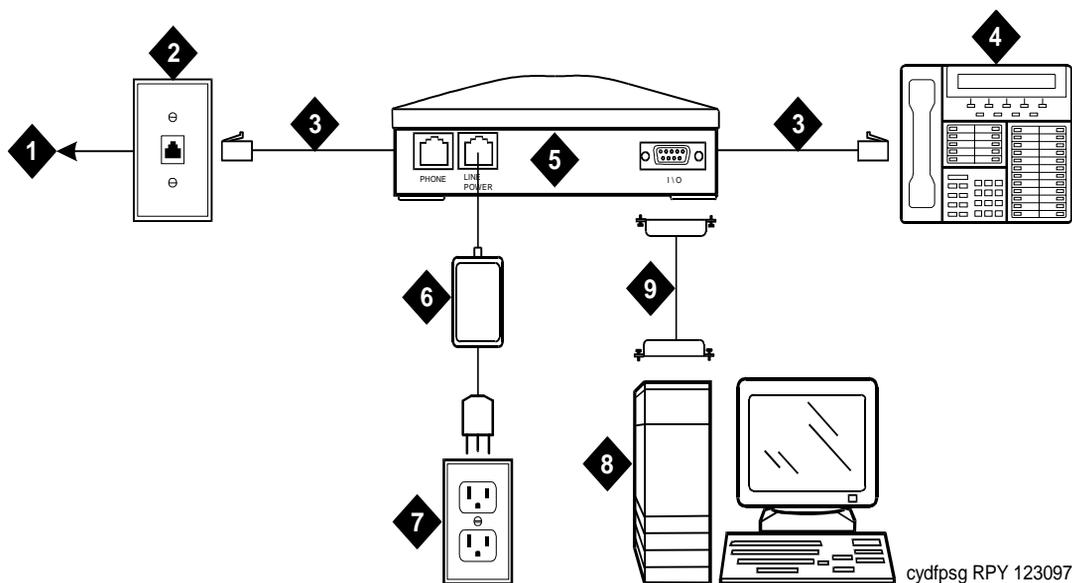
cydfpsg RPY 123097

1. To digital line circuit pack

2. 103A or modular wall jack

3. 4-pair modular cord

4. Digital telephone (such as a Callmaster)

5. 2- or 4-wire PassageWay adapter

6. Individual power supply for PassageWay adapter

7. Electrical outlet for power supply

8. Host computer (serial I/O connection)

9. 25-pair cable from PC to serial I/O jack

Figure 22.   Typical Connections Through PassageWay

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7 PassageWay Adapter (2- or 4-Wire)
PC Console (United States)

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PC Console (United States)

Figure 23 shows how a PassageWay adapter connects a personal computer (PC) and a DCP voice terminal within the United States.

pc_cons1 RBP 050396

1. DCP telephone	6. Electrical outlet for power supply	11. To digital line circuit pack
2. PassageWay adapter	7. 25-pair cable	12. 400B2 adapter
3. Host computer	8. D8W 4-pair modular cord	13. D7AP cable
4. Power supply for PassageWay adapter	9. Optional 500A adapter	
5. 103A or modular wall jack	10. Optional headset	

Figure 23.   Typical PC Console Connections (United States)

When a PC console is installed, the analog jack on the rear of the DCP voice terminal is inoperable.

PC Console (Non-United States)

Figure 24 shows how a PassageWay adapter connects a PC and a DCP voice terminal outside the United States.

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7 PassageWay Adapter (2- or 4-Wire)
  PC Console (Non-United States)

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1. DCP telephone (Such as 7400, 8403 or 8411)

2. PassageWay adapter

3. Host computer (serial I/O connection)

4. 1151A or 1151A2 power supply for PassageWay adapter

5. 103A or modular wall jack

6. Electrical outlet for power supply

7. 25-pair cable

8. D8W 4-pair modular cord

9. Optional 500A adapter

10. Optional headset

11. To digital line circuit pack

Figure 24.   Typical PC Console Connections (Non-United States)

With a PC console installed, the analog jack on the rear of the DCP voice terminal is inoperable.

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7 PassageWay Adapter (2- or 4-Wire)
PC Console (Non-United States) 94

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8   Printers
Configuring the Model 572   *95*

Printers

8

Configuring the Model 572

A 572 printer can function as a CDR device, system printer, or journal printer. The options are set with function keys rather than DIP switches. Figure 25 shows the arrangement of the function keys on the printer control panel.
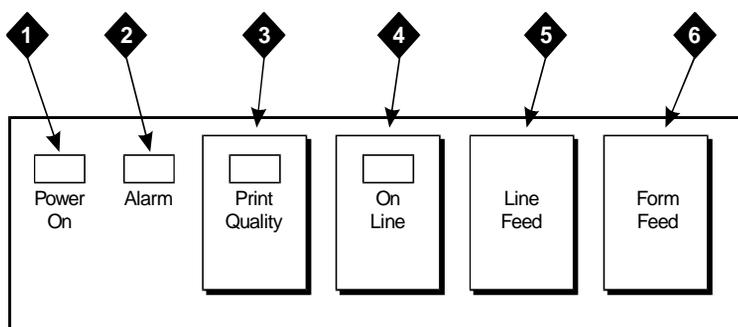
1. Power on button
2. Alarm button
3. Print quality button

4. On line button
5. Line feed button
6. Form feed button

Figure 25.   Control Panel for 572 Printer

Entering Setup Mode

1. Load paper.

2. Turn the **Power On** button OFF.

3. Simultaneously press and hold the **Print Quality** and **On Line** buttons.

4. Without releasing the **Print Quality** and **On Line** buttons, press the **Power On** button.

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8 Printers
Configuring the Model 572   96

5. Release all three buttons.

    The printer is now in set-up mode. It prints its current settings.

Selecting the Correct Configuration for Your Application

1. If the printer is used with a management terminal, as a CDR reporting device, or as a journal printer, set the options as shown in .

Table 14.   572 Printer Used with Management Terminal

Function	Function Name	Menu	Menu Status
01	FORM LENGTH	09	11
02	LPI	01	6
03	CPI	01	10
04	LQ or NLQ	01	LQ
05	BUZZER	01	ON
06	FONT	02	FONTCART
07	RESOLUTION	01	144
11	BUFFER	02	N-LINE
13	PW ON MODE	01	ON-LINE
14	DIRECTION	01	B1-DIR.1
15	BUFF FULL	02	LF + CR
16	P.E.	01	ACTIVE
17	AUTO CARRIAGE RETURN (CR)	01	CR + LF
18	ZERO	01	0
22	AUTO LINE FEED	01	CR ONLY
31	1'' SKIP	01	OFF
32	CHAR.SET (GO, GL)	02	USA
33	CHAR.SET (G1, GR)	01	UK
34	CHAR SET (G2)	03	GE
35	CHAR SET (G3)	07	LINE DRAWING
81	OFF-LINE STATE	01	ALL RECEIVE
82	DSR	02	OFF

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8 Printers
Configuring the Model 572

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Table 14.   572 Printer Used with Management Terminal — *Continued*

Function	Function Name	Menu	Menu Status
83	REQUEST TO SEND (RTS) TIMING	01	RTS
84	CD	02	OFF
85	CLEAR TO SEND (CTS)	02	OFF
91	OVER RUN	02	256
92	DATA BIT	02	8
93	PROTOCOL	03	XON/XOFF
94	STOP BIT	01	1
95	PARITY	01	NONE
96	PBS (matches connected device)	01	9600

2. If the printer is used as the system printer, set the options as shown in
.

Table 15.   572 Printer Used as System Printer

572 Printer Option Settings

Function	Function Name	Menu	Menu Status
01	FORM LENGTH	09	11
02	LPI	01	6
03	CPI	01	10
04	LQ or NLQ	01	LQ
05	BUZZER	01	ON
06	FONT	02	FONTCART
07	RESOLUTION	01	144
11	BUFFER	02	N-LINE
13	PW ON MODE	01	ON-LINE
14	DIRECTION	01	B1-DIR.1
15	BUFF FULL	02	LF + CR
16	P.E.	01	ACTIVE

Continued on next page

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8 Printers
Configuring the Model 572   98

Table 15.   572 Printer Used as System Printer

572 Printer Option Settings

Function	Function Name	Menu	Menu Status
17	AUTO CARRIAGE RETURN (CR)	01	CR + LF
18	ZERO	01	0
22	AUTO LINE FEED	01	CR ONLY
31	1" SKIP	01	OFF
32	CHAR.SET (GO, GL)	02	USA
33	CHAR.SET (G1, GR)	01	UK
34	CHAR SET (G2)	03	GE
35	CHAR SET (G3)	07	LINE DRAWING
81	OFF-LINE STATE	01	ALL RECEIVE
82	DSR	02	OFF
83	REQUEST TO SEND (RTS) TIMING	01	RTS
84	CD	02	OFF
85	CLEAR TO SEND (CTS)	02	OFF
91	OVER RUN	02	256
92	DATA BIT	02	8
93	PROTOCOL	03	XON/XOFF
94	STOP BIT	01	1
95	PARITY	01	NONE
96	PBS	04	1200

Using the Control Panel

1. Use **Line Feed** or **Form Feed** to step through the options for the function.

2. To activate the menu for the function, press **On Line**.

3. To step through the options for the function, press **Line Feed** and **Form Feed**.

4. When you reach the option you are looking for, press **Print Quality** to select.

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8 Printers
Connecting the Printer   99

The printer prints the new setting. Repeat for each option to be set.

5. When finished, press **Print Quality**. The printer changes to normal mode.

Connecting the Printer

Connect the printer using one of the following methods:

■ An Asynchronous Data Unit (ADU) or data module (see Chapter 4, "Data Modules and Asynchronous Data Units")

■ A direct, RS-232 connection from the serial port on the printer (often labeled COM) to the serial port on the switch (labled DCE).

Okidata OP16N

The following sections describe the set-up of the printer and associated interfaces used during testing.

Setting Up the OP16N

1. Set up the printer, install toner, and load paper as described in the vendor documentation, with one exception: fill the paper tray until the paper indicator gauge reads PAPER FULL.

   Do not try to load the full 500 sheets of 20-lb. paper indicated in the documentation. The true capacity is usually about 475 sheets. When more is loaded, the printer jams.

Connecting OP16N to CMS

Connecting the OP16N via a parallel port

If the new printer is being connected to CMS through the parallel interface, the connectivity has not changed.

See Figure 26, "Connecting the OP16N printer to a Sun CMS using the parallel interface", for an overview of possible OP16N parallel connections.

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8 Printers
Okidata OP16N   *100*

OP16n printer
(120-Volt),
cc 407678267
(new)

OP16n
parallel port

Centronics parallel printer cable
cc 846943298

NTS with
parallel port

Sun CMS
Server

OP16n printer
(120-Volt),
cc 407678267
(new)

OP16n
parallel port

Sun server
parallel port

Sun Centronics parallel printer cable
cc 407361856

Sun CMS
Server
(except not E3000)

Figure 26.   Connecting the OP16N printer to a Sun CMS using the parallel interface

Connecting the OP16N via serial port

The OP16N comes with a parallel interface only. To connect it to a serial port, you have to use a converter. Proceed as follows.

1. Attach an OKIDATA Serial Interface Converter (part number 50115001) to the parallel port on the back of the printer.

2. Connect the printer to a serial port on the CMS.

   The following connections are possible, depending on the CMS equipment you have installed:

   ■ A serial port on an 8-, 16-, or 64-port NTS (Network Terminal Server) installed on a Sun server

   ■ A serial port on an 8- or 16-port Aurora Ports Card installed on a Sun server other than the E3000

   ■ A serial port on an Equinox Megaplex brick installed on an AT&T Intel-based CMS platform

   ■ A serial port on an IPC-1600 fanout module installed on an AT&T Intel-based CMS platform

   See , "Connecting the OP16N printer to a Sun CMS using the serial converter", for an overview of possible OP16N serial connections.

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8 Printers
Okidata OP16N   *101*
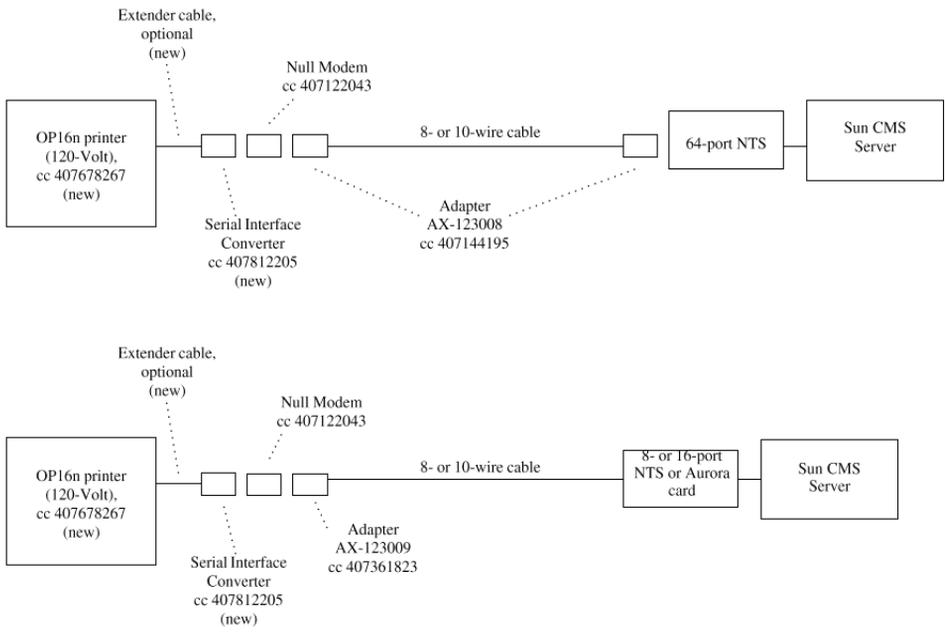
Figure 27.   Connecting the OP16N printer to a Sun CMS using the serial converter
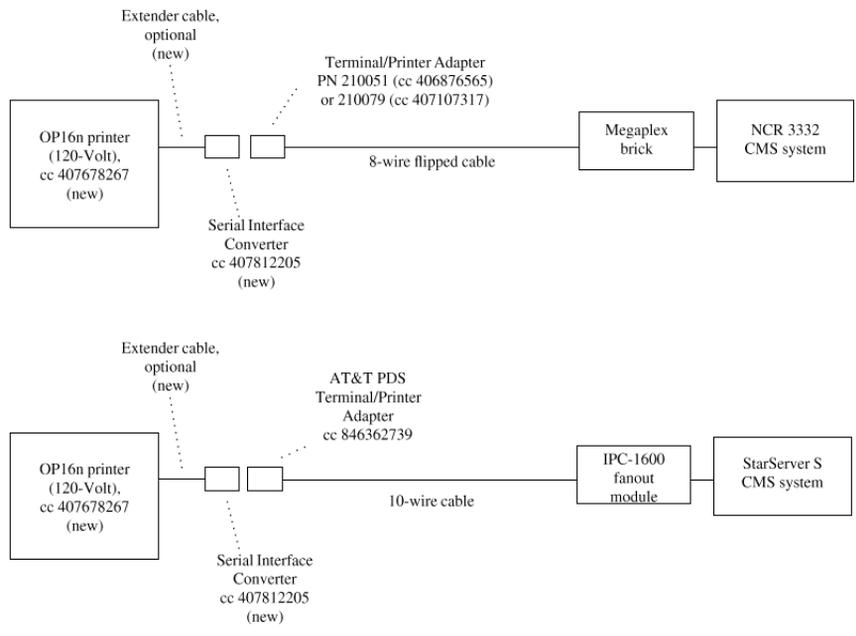
Figure 28.   Connecting the OP16N printer to a Megaplex brick or IPC-1600 fanout

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8 Printers
Okidata OP16N   *102*

Administering the OP16N

On Intel CMS systems, in **face**, the **Printer Type** for the OP16n is **HPLASERJET**.
On Sun CMS systems, the **lpadmin type** for the OP16N is **hplaserjet**.

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9 DEFINITY LAN Gateway System
Installing DEFINITY LAN Gateway in a Single-Carrier Cabinet 103

DEFINITY LAN Gateway System

9

The DEFINITY LAN Gateway system is used in display set mode only, not in control link. Use it with the R7r, R7si, or R7csi. Refer to the *DEFINITY Communications System Generic 3 Installation, Administration and Maintenance of CallVisor ASAI over the DEFINITY LAN Gateway,* 555-230-223 for complete installation procedures.

Use the **add subscribers** command during administration, to prevent a **no port available** error. When administration is complete, enter **reset system reboot** to clear all alarms.

Installing DEFINITY LAN Gateway in a Single-Carrier Cabinet

The DEFINITY LAN Gateway system installs in five adjacent slots, preferably the five rightmost slots in a Single-Carrier Cabinet. See Figure 29.

⚠ CAUTION:
Do not power up the DEFINITY LAN Gateway System until instructed to do so. Refer to the DEFINITY Communications System Generic 3 Installation, Administration and Maintenance of CallVisor ASAI over the DEFINITY LAN Gateway, 555-230-223

It is not necessary to power down a system before installing a DEFINITY LAN Gateway.

⚠ CAUTION:
When the assembly is inserted, it will automatically power up (including the disk), run diagnostics, and boot. Therefore, to avoid a disk crash, never remove the assembly and never power down the DEFINITY System without first shutting down the unit and allowing the disk to completely spin down.

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9 DEFINITY LAN Gateway System
Installing DEFINITY LAN Gateway in a Single-Carrier Cabinet   104

⇒ **NOTE:**
The system treats a DEFINITY LAN Gateway like a digital line circuit pack connecting 8 or 17 ports. These emulated stations (serving as ports) are assigned as members of a hunt group that reside in a coverage path. This coverage path is used by every station that covers an LAN Gateway system.

evdxgate RPY 090397
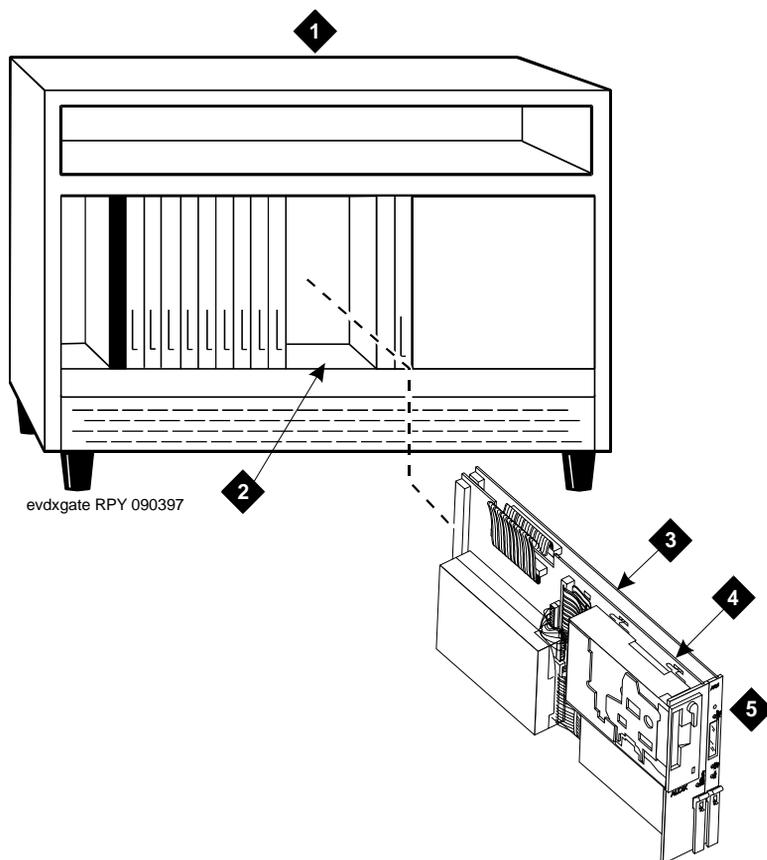
1. System cabinet

2. Five adjacent slots in cabinet

3. Multi-function circuit pack

4. Alarm circuit pack

5. DEFINITY LAN gateway

Figure 29.   Typical DEFINITY LAN Gateway Installation

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9 DEFINITY LAN Gateway System
Installing DEFINITY LAN Gateway in a Multi-Carrier Cabinet   105

Installing DEFINITY LAN Gateway in a Multi-Carrier Cabinet

It is not necessary to power down a system before installing a DEFINITY LAN Gateway

⚠ CAUTION:

Never locate a DEFINITY LAN Gateway in port carrier C of a multi-carrier cabinet. Never locate a DEFINITY LAN Gateway either in port slots 01 to 03 of an expansion control cabinet or in slots 01 to 04 of a port cabinet.

⚠ CAUTION:

When the DEFINITY LAN Gateway assembly is inserted, it will automatically power up (including the disk), run diagnostics, and boot. Therefore, to avoid a disk crash, never remove the assembly and never power down the DEFINITY System without first shutting down the unit and allowing the disk to completely spin down.

1. If necessary, to provide five adjacent port slots in a desirable location, relocate and retranslate port circuit packs. See Figure 30.

   The system treats a DEFINITY LAN Gateway like a TN754B Digital Line circuit pack connecting 8 or 17 ports. These emulated stations (serving as ports) are assigned as members of a hunt group that reside in a coverage path. This coverage path is used by every station that covers an LAN Gateway system.

   ## ⚠ CAUTION:

   Do not power up the DEFINITY LAN Gateway System until the installation and cabling is completed.

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9 DEFINITY LAN Gateway System
Installing DEFINITY LAN Gateway in a Multi-Carrier Cabinet

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cydfadr3 RPY 090397

1. System cabinet	3. Multi-function circuit pack	5. DEFINITY LAN gateway
2. Five adjacent slots in carrier	4. Alarm circuit pack	

Figure 30.   Typical DEFINITY LAN Gateway Installation

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9 DEFINITY LAN Gateway System
Connecting the Alarm Origination Cable   107

Connecting the Alarm Origination Cable

The alarm cable connects to the MDF and cross-connects to the customer-supplied alarm equipment. See <u>Figure 31</u> and <u>Table 16</u>.
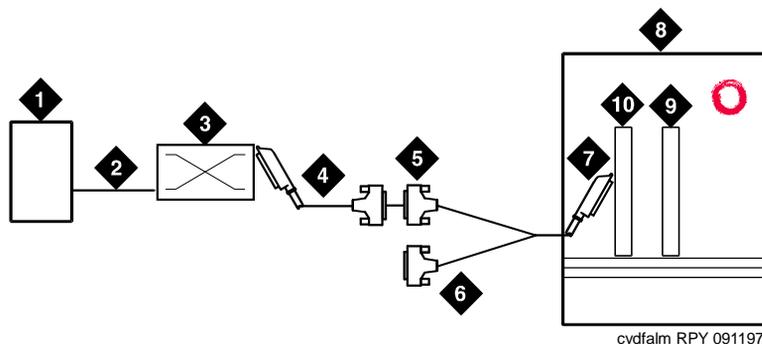
cydfalm RPY 091197

1. Customer-supplied alarm equipment
2. Cross-connections to alarm equipment
3. Main distribution frame (MDF)
4. B25A 25-pair cable
5. Female **ALARM** Connector on alarm Y-cable
6. Unused RS-232 connector on alarm Y-cable
7. Alarm Y-cable
8. System cabinet
9. Multi-function circuit pack (part of LAN gateway)
10. Alarm circuit pack (part of LAN gateway)

Figure 31.   Connecting the Alarm Origination Cable

1. Connect the alarm Y-cable to the first connector associated with the alarm circuit pack on the LAN gateway system on the rear of the system cabinet.

2. Attach the male Amphenol connector on a B25A cable to the female Amphenol connector labeled **ALARM** on the alarm Y-cable.

3. Connect the opposite end of the B25A cable to the MDF.

   NOTE:
   Do not connect the RS-232 connector on the alarm Y-cable. The standard alarm origination circuit uses an on-board modem that is internally wired to the connector on the alarm Y-cable.

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9 DEFINITY LAN Gateway System
Connecting Terminals   108

4. Perform the cross-connects for the alarm origination connection as described on the service order. Also see Table 16.

Table 16.   Alarm Origination Pinouts (ALB Y-cable)

Pin Number	Definition
27	Tip (white/blue)
1	Ring (blue/white)
44	Minor RTN (return) (yellow/brown)
19	Minor (brown/yellow)
47	Major RTN (return) (violet/orange)
22	Major (orange/violet)

Connecting Terminals

You need a terminal to administer the DEFINITY LAN Gateway system. You can must have a local administration terminal and you mayalso have a local maintenance terminal as well.

There are four ways to connect a local administration terminal:

- Direct connection

- Modem connection (using Comsphere 3820, US Robotics Sportster External 33.6 Fax Modem, or similar)

- Asynchronous Data Unit (ADU)

- One 7400A data module and one 7400B data module (recommended) or two 7400A data modules

Local maintenance terminals are always connected directly.

Directly Connecting a Terminal

Figure 32 shows typical connections for a local maintenance terminal.

Figure 33 shows typical connections for a local administration terminal.

For specific installation instructions for the terminal, refer to the documentation shipped with it.

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9 DEFINITY LAN Gateway System
Connecting Terminals

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1. Administration terminal
2. Short cable supplied with 715 terminals
3. RS-232 cable
4. 117A isolator (DC powered systems only)
5. Port A connector on MFB Y-cable

6. Port B connector on MFB Y-cable
7. Multi-function Y-cable (MFB)
8. System cabinet
9. Alarm circuit pack (part of LAN gateway)
10. Multi-function circuit pack (part of LAN gateway)

Figure 32.   Typical Local Maintenance Terminal Connections
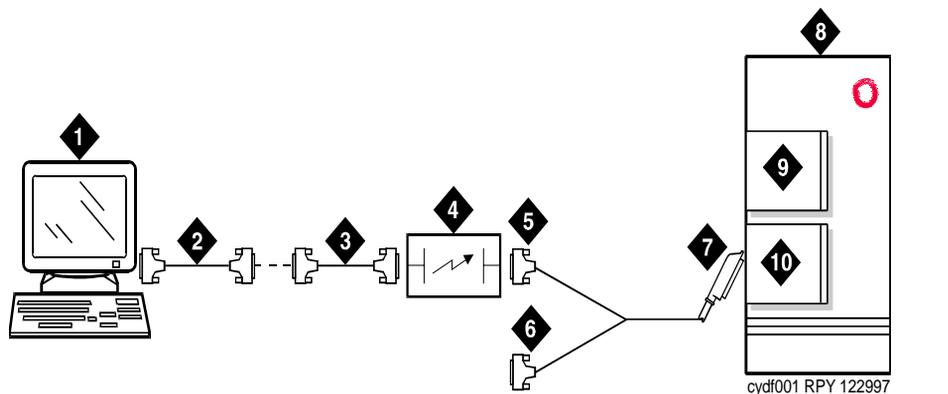
1. Administration terminal
2. Short cable shipped with 715 terminals)
3. RS-232 cable
4. 117A Isolator (DC-powered systems Only)
5. Port B connector on MFB Y-cable

6. Unused RS-232 connector on MFB Y-cable
7. 25-pair connector on multi-function Y-cable (MFB)
8. System cabinet
9. Alarm circuit pack (part of LAN gateway)
10. Multi-function circuit pack (part of LAN gateway)

Figure 33.   Typical Local Administration Terminal Connections

Testing a direct connection

1. Plug the power cord on the terminal into a wall outlet.

2. Power on the terminal.

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3. If you are installing a printer, set the printer options as described in the printer manual. Then set the corresponding options on the terminal to match.

   If the terminal is installed correctly and if the DEFINITY LAN Gateway is in the **ADX**, **OAM**, **OS** or **AINIT** state, the screen displays the **login** prompt.

4. If you are not installing a printer, set the terminal options according to the instructions in the terminal documentation.

   If the terminal is installed correctly and if the DEFINITY LAN Gateway is in the **ADX**, **OAM**, **OS** or **AINIT** state, the screen displays the **login** prompt.

5. If the terminal does not display the **login** prompt, write down the state displayed, then see the troubleshooting procedures for terminal connections in CallVisor ASAI/DEFINITY LAN Gateway documentation.

Connecting an administration terminal via modems

Connect as shown in Figure 34.
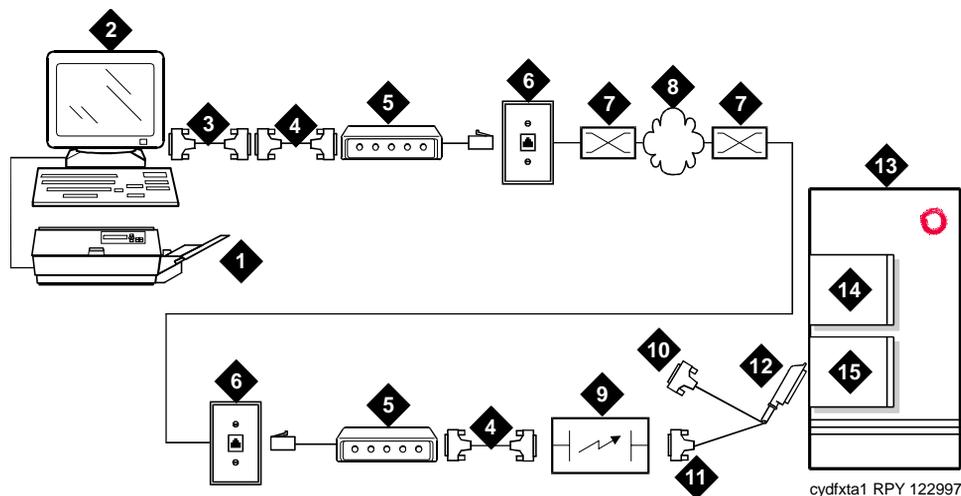
1. Terminal printer (optional)
2. System administration terminal
3. RS-232 cable
4. Short cable supplied with terminal
5. Modem
6. 103A or modular wall jack
7. Main distribution frame (MDF)
8. Public switched telephone network
9. 117A Isolator (DC-powered Port-A connector on MFB Y-cable systems only)
10. Port B connector on MFB Y-cable
11. Port A connector on MFB Y-cable
12. Multi-function Y-cable (MFB)
13. System cabinet
14. Alarm circuit pack (part of LAN gateway)
15. Multi-function circuit pack (part of LAN gateway)

cydfxta1 RPY 122997

Figure 34. Typical Administration Terminal Connections via Modems

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1. Attach the connector on one end of a modular cord to the modem. Attach the other connector to the modular wall jack (information outlet).

2. Connect the second modem to the wall jack at the remote terminal site.

3. If you are installing a printer, connect the printer to the terminal, and set the printer options as described in the printer manual. Then set the corresponding options on the terminal to match.

4. If you are not installing a printer, set the terminal options according to the instructions in the terminal documentation.

5. At the terminal, enter **AT**.

6. If the modem is installed correctly, it responds with **OK** (on the terminal screen).

7. Enter **ATDT** and the telephone number of the modem connected to **Port B** (listed on the Installing the Terminals worksheet).

   If the terminal is installed correctly and if the DEFINITY LAN Gateway is in the **ADX**, **OAM**, **OS** or **AINIT** state, the screen displays the **login** prompt.

8. If the terminal does not display the **login** prompt, write down the state displayed, then see the troubleshooting procedures for terminal connections in CallVisor ASAI/DEFINITY LAN Gateway documentation.

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Connecting an administration terminal via Asynchronous Data Units

Connect as shown in Figure 35.

1. Set the terminal options as described in the terminal documentation.

cydftadu RPY 091197

1. Administration terminal
2. 25-Pin EIA-232-D connector on Z3A1 ADU
3. D8AM crossover cord
4. 103A or modular wall jack
5. Main distribution frame (MDF)
6. D8W cord
7. power supply
8. D7AP cord

9. 400B2 adapter
10. Z3A2 ADU
11. Port A connector on MFB Y-cable
12. Port B connector on MFB-Y-cable
13. Multi-function Y-cable (MFB)
14. System cabinet
15. Multi-function circuit pack (part of LAN gateway)

Figure 35.   Typical Administration Terminal Connections through ADUs

If the terminal is installed correctly and if the DEFINITY LAN Gateway is in the **ADX**, **OAM**, **OS** or **AINIT** state, the screen displays the **login** prompt.

2. If the terminal does not display the **login** prompt, write down the state displayed, then see the troubleshooting procedures for terminal connections in CallVisor ASAI/DEFINITY LAN Gateway documentation.

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Connect the Administration Terminal via Data Modules

Two data modules can be used in this configuration. The DEFINITY LAN gateway side of the configuration requires the 7400A. A second 7400A can be used and is connected the same as a 7400B. Set the options as described in Chapter 4, "Data Modules and Asynchronous Data Units".

1. Make sure the EIA connector board (located inside the data module) is set to DCE (factory default). If not, unplug the card and turn it around to the DCE setting (see "Mode Selection" on page 5-84 for details).

2. Connect as shown in Figure 36.

3. If you are installing a printer, set the printer options as described in the printer manual. Then set the corresponding options on the terminal to match.

4. If you are not installing a printer, set the terminal options according to the instructions in the terminal documentation.

5. At the terminal, enter **AT**. If the 7400B data module is connected correctly, it responds with OK (written on the terminal screen).

6. Enter **ATDT** and the telephone number of the 7400A data module connected to the DEFINITY LAN gateway (refer to the "Installing the Terminals" worksheet for this number).

7. Check the DIP switches inside the front panel. If a telephone is not connected with the data module, set the first DIP switch (1) to the ON position. If a telephone is connected, set all DIP switches OFF.

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9 DEFINITY LAN Gateway System
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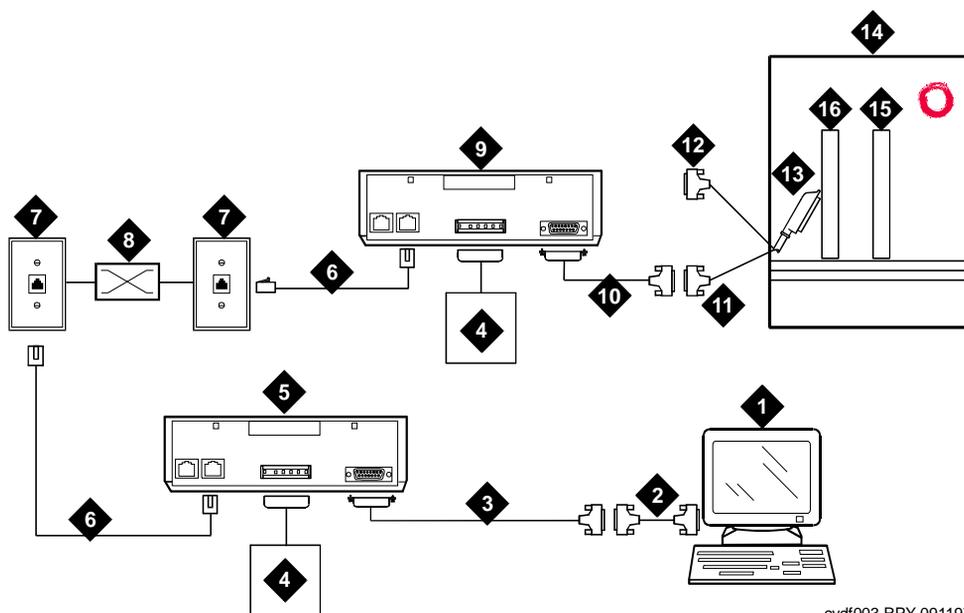
cydf003 RPY 091197

1. Administration terminal
2. Short cable supplied with 715 terminal (Comcode 7537531)
3. RS-232 cable
4. Data module power supply
5. 7400B data module
6. D8W cord
7. 103A or modular wall jack
8. Main distribution frame (MDF)

9. 7400A data module
10. Null modem cable
11. Port B connector on MFB Y-cable
12. Port A connector on MFB Y-cable
13. Multi-function Y-cable (MFB
14. System cabinet
15. Alarm circuit pack (Part of LAN gateway)
16. Multi-function circuit pack (part of LAN gateway)

Figure 36. Typical Administration Terminal Connections Using Data Modules

8. After a connect interval, if the terminal and 7400 data modules are installed correctly (and the DEFINITY LAN Gateway is in either *ADX*, *OAM*, *OS* or *AINIT* state), the screen displays the login prompt.

9. If the terminal does not display the login prompt, write down the state displayed, then see the troubleshooting procedures for terminal connections in *DEFINITY Communications System Generic 3 Installation, Administration and Maintenance of CallVisor ASAI over the DEFINITY LAN Gateway,* 555-230-223.

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9 DEFINITY LAN Gateway System
Installing a Printer 115

Installing a Printer

The following instructions are typical for most installations. But follow the instructions supplied with the printer.

1. Unpack and set up the printer according to the instructions supplied with the printer.

2. Be sure that the printer has paper, the ribbon is properly installed, and the cover is closed.

3. If you are connecting a serial printer to the DTE connector on the terminal, install a null modem cable (or RS-232 cable and null-modem adapter) between the printer and the terminal.

4. Connect one end of the printer cable to either the serial or parallel port on the terminal (depending on the type of terminal and printer). Secure the connector with the screws provided.

5. Connect the opposite end of the printer cable to the matching port (serial or parallel) on the printer.

6. Set the options on the printer. Refer to the documentation shipped with the printer.

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Installing a Printer 116

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10 DCS Connections

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DCS Connections

10

Typically, cabinets are connected by distributed communication-system (DCS) links using direct connections or modems.

The system uses the processor interface as the control circuit pack. The control circuit pack provides a single EIA port that allows access to one data link. Connections to the system vary depending on the distance between systems and the type of system being connected.

cydfdcs1 RPY 123097
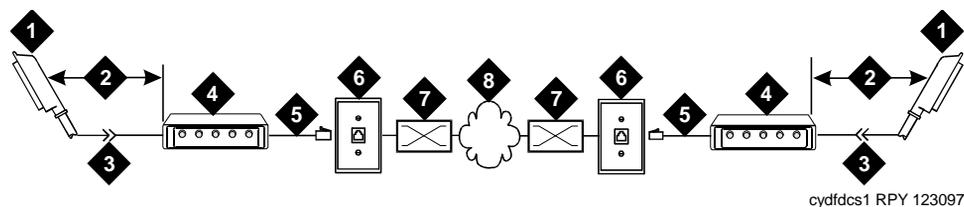
1. To processor interface circuit pack to PI connector on rear of control carrier

2. 25 feet (7.72 m) maximum

3. M25B RS-232 cable

4. Data module

5. Modular cord

6. 103A or modular wall jack

7. Main distribution frame (MDF)

8. Public switched telephone network (PSTN)

Figure 37.   Typical DCS Link, System to System

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10 DCS Connections

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11 Channel Service Units
Installing an Integrated Channel Service Unit (ICSU) Module   119

Channel Service Units

11

Installing an Integrated Channel Service Unit (ICSU) Module

The integrated channel service unit (ICSU) is a combination of a 120A CSU module integrated with a DS1 circuit pack. Use this device with the 700A DS1 loopback jack when testing the DS1 span.

Checking for required components

The integrated channel service unit (ICSU) package contains:

- 120A CSU module

- Cable H700-383

    4-pair modular cord
    Group 2, 50-Foot (15.2 m) cable (standard)

- Cord DW8A-DE

    4-pair modular cord to alarm contacts

- DS1 circuit pack

    The basic ICSU requires a TN474E or TN777D or later suffix. The enhanced integrated channel service unit requires a TN474F or TN777E or later suffix.

Installing the 120A CSU

See .

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Installation for Adjuncts and Peripherals 555-230-125

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11 Channel Service Units
Installing an Integrated Channel Service Unit (ICSU) Module   120

1. Rear of carrier containing DS1 circuit pack

2. 120A CSU

3. 4-pair cord to network interface (H700-383)

4. DW8A-DE 4-pair cord to alarm contacts (optional)

5. To 25-pair connector on rear of carrier containing DS1 circuit pack
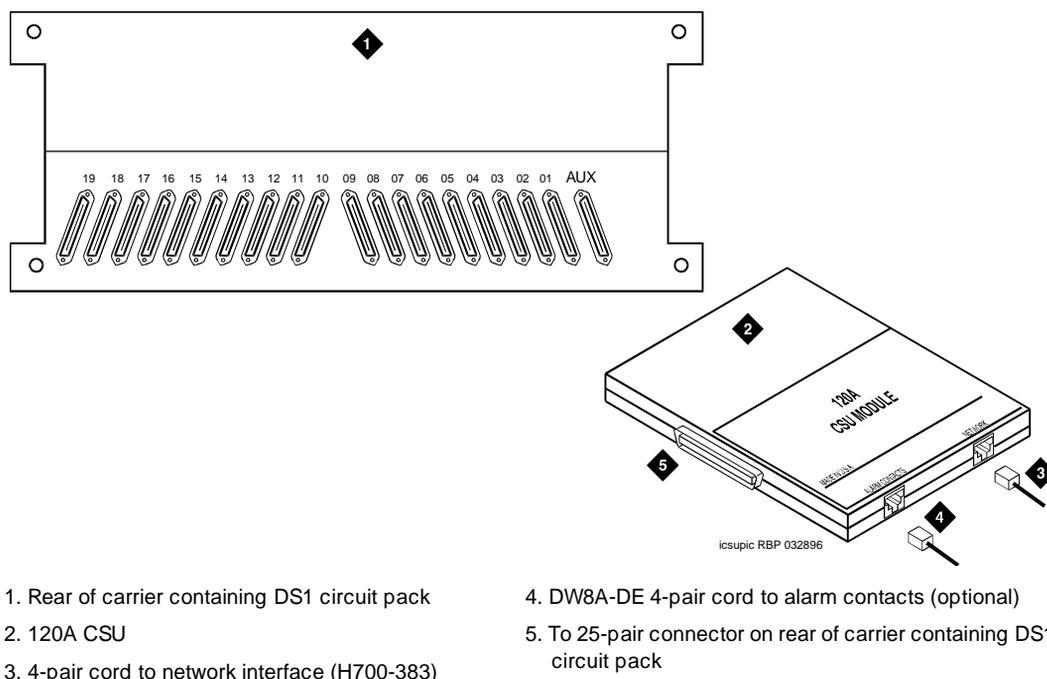
Figure 38.   120A Channel Service Unit Module

⚠ CAUTION:

Do not plug the 120A into any circuit pack other than a TN474F or TN777E or later release/vintage. Do not connect the 120A to any interface other than a network smart jack.

Be sure the DS1 circuit pack is set for 24-channel operation (1.544 Mbps). The 120A does not operate with the 32-channel interface. A switch on the circuit pack or administration sets this option.

⚠ CAUTION:

Always wear an anti-static wrist strap when installing a 120A module. Do not touch the external alarm cable when it is connected to the 120A. Static discharge can damage connector terminals and relays.

1. Unplug the DS1 circuit pack from its slot.

2. Install a 4C retainer in the 50-pin plug associated with the DS1 circuit pack slot.

3. Plug the 120A's 25-pair connector directly into the plug associated with the DS1 circuit pack slot.

4. Secure the 4C retainer around the 120A.

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Installing an Integrated Channel Service Unit (ICSU) Module   121

5. Attach the supplied H700-383 cable to the 120A and to the network smart jack.

   This cable is directional. To determine the end that connects to the 120A, perform a continuity test between pins 3 and 7. The end with this continuity is the 120A end. The shield is grounded only at the 120A end.

   Use the cable provided. If cabling other than that provided with the 120A is used, observe the following guidelines:

   - Use 24-gauge wire that provides individually shielded, twisted pairs for transmit and receive signals. Use the cable between the network interface and the 120A. Ground the shields of this cable only at the 120A end to avoid ground loops.

   - Cabling between the network interface and 120A can have no bridge taps.

   - If using standard house riser cable for connections between the network interface and the 120A, maintain a 100-pair separation between the receive and transmit twisted pairs.

   - If using standard house riser cable for connections between the network interface and the 120A, allow no more than 2 cross connects to 110-type cross connect blocks.

   - Never use quad cable (untwisted two pair telephone cable) in a DS1 line.

   - Avoid mixing wires of different gauges in a DS1 line.

6. If using external alarm equipment, attach the supplied DW8 cable to the 120A and the external equipment. The maximum length of this cable depends on the alarm equipment.

7. If a TN474F is used, make sure the circuit pack is set for 24-channel operation. Set the switch on the circuit pack as shown in Figure 2-1.

8. Open the DS1 circuit-pack administration form from the system administration console. Set the line compensation field to 0-133 feet (40.6 m).

9. Reset the 120A by reseating the DS1 circuit pack.

   When you reinsert the DS1 circuit pack after installing a 120A CSU the 120A resets. The DS1 circuit pack initializes and tests the 120A. When initialization and testing is complete, the green LED goes off. If the RED indicator is OFF after the test, the ICSU is working.

10. If the circuits do not pass the self test, troubleshoot the 120A as instructed in *Integrated CSU Module Installation and Operation,* 555-230-193.

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11 Channel Service Units
Installing an Integrated Channel Service Unit (ICSU) Module 122

Table 17 provides the H700-383 cable pinouts. Table 18 provides the cable lengths for each cable group number.

Table 17.   H700-383 cable Pin Assignments

Pin	Color	Channel Service Unit Designation	Network Designation	Function
1	BK	Line in 0	R1	RCV
2	Y	Line in 1	T1	
3	Shield			
4	R	Line out 0	R	XMT
5	G	Line out 1	T	
7	Shield			
7				Not assigned
8				Not assigned

Table 18.   H700-383 cable Lengths by Group Number

Group	Length	Group	Length
1	25 feet (7.7 m)	5	125 feet (38.1 m)
2	50 feet (15.2 m)	7	200 feet (71 m)
3	75 feet (22.9 m)	7	400 feet (122 m)
4	100 feet (30.5 m)	8	750 feet (198.1 m)

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11 Channel Service Units
Installing a 3150/3170 Channel Service Unit 123

Installing a 3150/3170 Channel Service Unit

1. Install the CSU as shown in Figure 39. For some installations (such as a DS1 converter), use a Y-cable to connect the DEFINITY System to the quad cable. Table 19 shows the Y-cable lengths. Be sure to label all cables.

   Figure 39 shows a typical connection from the H700-348 Quad cable to the CSU, through the H700-307 network cable, and to the network interface through the smart jacks. The quad cable provides up to four connections using a 15-pin connector that plugs into the DTE jack on each CSU. The H700-348 quad cable may require an adapter cable.
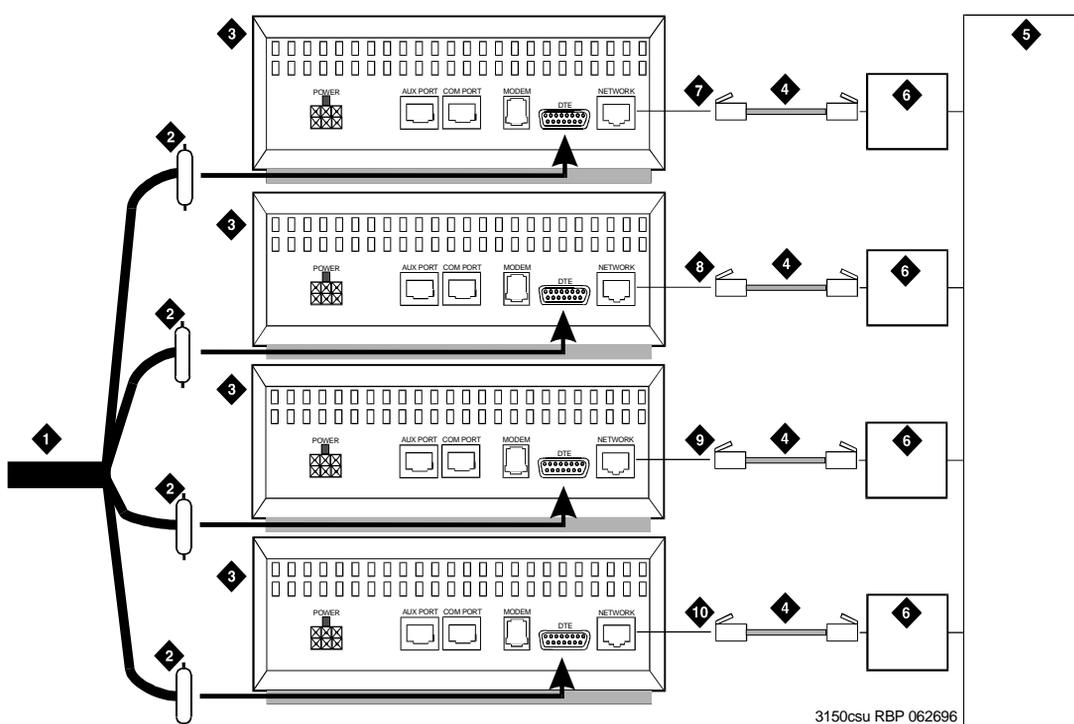

```
3150csu RBP 062696
```

1. H700-348 quad cable
2. 15-pin male D-connectors (to DTE jacks on CSU)
3. Channel service unit (CSU)
4. H700-307 cable (RJ-48C to RJ-48C)
5. Network interface
6. Smart jack (if provided)
7. Cable A
8. Cable B
9. Cable C
10. Cable D

Figure 39.   3150/3170 Channel Service Unit Connections

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11 Channel Service Units
Installing a 3150/3170 Channel Service Unit   124
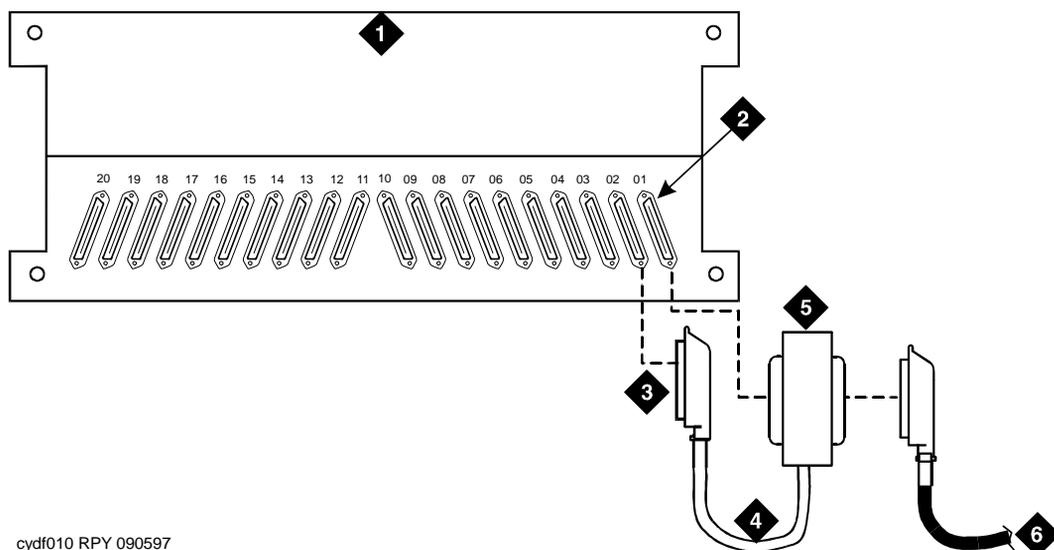
cydf010 RPY 090597

1. Port carrier
2. DS1 converter connector
3. 50-pair female connector to DEFINITY System
4. 14-Inch (35.57 cm) "Y" cable

5. 50-Pin Male/50-pin female double-headed connector cable
6. Quad cable (with 50-pin male connector) connects to the channel service unit.

Figure 40.   DS1 Converter Connections Using Double-Headed cable

Table 19.   "Y" cable Lengths (DS1 converter Only)

Length (in/cm)	Description	Comcode
14/35.5	DS1 converter circuit pack to adjacent expansion interface circuit pack or switch node interface circuit pack in same carrier	847245750
70/177.8	DS1 converter circuit pack to expansion interface circuit pack or switch node interface in another carrier	847245778
14/35.5	DS1 converter circuit pack to fiber optic transceiver (DC-powered cabinets only). This cable is for intercabinet cabling only.	847245777
14/35.5	DS1 converter circuit pack to adjacent TN570/B/C expansion interface circuit pack	847747741

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12 Trunking Options
TN760D Tie Trunk Option Settings   125

Trunking Options

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TN760D Tie Trunk Option Settings

The TN760D tie trunk circuit pack interfaces between four tie trunks and the TDM bus. 2 tip and ring pairs form a 4-wire analog transmission line. An E and M pair are DC signaling leads used for call setup. The E-lead receives signals from the tie trunk and the M-lead transmits signals to the tie trunk.

To choose the preferred signaling format (Table 20 and Table 21), set the switches on the TN760D and administer the port per Figure 41 on page 126 and Table 20.

⚠ CAUTION:
To prevent damage from static electricity, wear an EMC wrist strap (Comcode 900698226) when handling circuit packs or other components.

Table 20.   Signaling Formats for TN760D

Mode	Type
E & M	Type I standard (unprotected)
E & M	Type I compatible (unprotected)
Protected	Type I compatible, type I standard
Simplex	Type V
E & M	Type V
E & M	Type V revised

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12 Trunking Options
TN760D Tie Trunk Option Settings

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Table 21. Signaling Type Summary

Signaling Type	Transmit (M-Lead)		Receive (E-Lead)	
	On-Hook	Off-Hook	On-Hook	Off-Hook
Type I standard	Ground	Battery	Open[a]/battery	Ground
Type I compatible	Open[1]/battery	Ground	Grd	Open[1]/battery
Type V	Open[1]/battery	Ground	Open	Ground
Type V reversed	Ground	Open	Ground	Open

a. An open circuit is preferred instead of battery voltage.
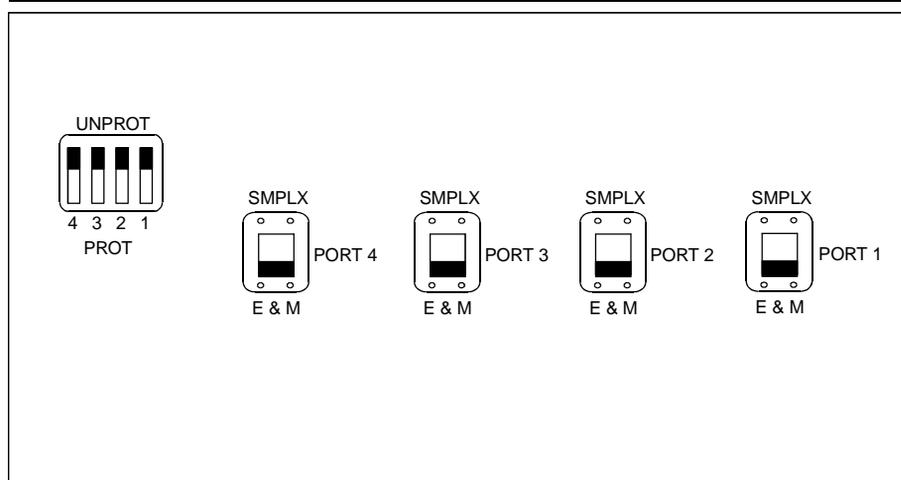
r758183 RBP 050896

Figure 41. TN760D Tie Trunk Circuit Pack (Component Side)

Table 22. TN760D Option Switch Settings and Administration

Installation Situation		Signaling Format		E&M/ SMPLX Switch	Prot/ Unprot Switch	Port
Condition	To	System	Far-End			
Co-located	Sys85/	Simplex	Simplex	SMPLX	Either	Type 5

Continued on next page

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12 Trunking Options
TN760D Tie Trunk Option Settings   *127*

Table 22.   TN760D Option Switch Settings and Administration — *Continued*

	G2	Type 5	Type 5			
Interbuilding	Sys85/ G2	Simplex Type 5	Simplex Type 5	SMPLX	Either	Type 5
Co-located	Dimension PBX	E&M type 1 Compatible	Standard	E&M	Unprot	Type 1 Compatible
Interbuilding	Dimension PBX	Protected type 1 Compatible	Protected type 1 Standard	E&M	Prot	Type 1 Compatible
Co-located	DEFINITY	E&M type 1 Compatible	E&M type 1 Standard	E&M	Unprot	Type 1 Compatible
Interbuilding	DEFINITY	Protected type 1 Compatible	Protected type 1 Standard plus	E&M	Prot	Type 1 Compatible
Co-located	Net integrated	E&M Type 1 Standard	Any PBX	E&M	Unprot	Type 1

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12 Trunking Options
TN760D Tie Trunk Option Settings   *128*

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13 DS1/T1 CPE Loopback Jack
Installing Loopback Jacks   129

DS1/T1 CPE Loopback Jack

13

> **NOTE:**
> Do not remove the loopback jack after installation. It should always be available for remote tests of the DS1 span.

Using the DS1 CPE loopback jack (apparatus code 700A), a technician can test the DS1 span between the system and the network interface point. *The loopback jack is required when DC power appears at the interface to the ICSU*. The loopback jack isolates the ICSU from the DC power and properly loops the DC span power.

> **NOTE:**
> The loopback jack operates with DS1 circuit packs and R7 software. The loopback jack operates with the 120 integrated channel service unit (ICSU) only. It does not support 3100-series channel service units or other external CSUs or older ICSUs.

Installing Loopback Jacks

With a Smart Jack

Install the loopback jack at the interface to the smart jack, if possible. This position provides maximum coverage of CPE wiring when remote loopback tests are run.

If the smart jack is not accessible, install the loopback jack at the extended demarcation point.

If there is no extended demarcation point, install the loopback jack directly at the network interface point as shown in Figure 42.

If there is an extended demarcation point and the smart jack is not accessible, install the loopback jack as shown in Figure 43.

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13 DS1/T1 CPE Loopback Jack
Administering the Loopback Jack

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If there is an extended demarcation point, but the smart jack is accessible, install the loopback jack as shown in <u>Figure 44</u>.

1. To install the loopback jack, simply disconnect the RJ-48 (8-wide) connector (typically an H700-383 cable) at the appropriate interface point and connect the loopback jack in series with the DS1 span. See <u>Figure 42</u> through <u>Figure 46</u>.

2. Plug the H700-383 cable from the ICSU into the female connector on the loopback jack.

3. Plug the male connector on the loopback jack cable into the network interface point.

   ### $\Rightarrow$ NOTE:
   Do not remove the loopback jack after installation. This is not a test tool and should always be available to remotely test a DS1 span.

Without a Smart Jack

Install the loopback jack at the point where the cabling from the ICSU plugs into the *dumb* block. If there is more than one *dumb* block, choose the one that is closest to the Interface Termination feed or the fiber MUX to provide maximum coverage for loopback jack tests. Refer to <u>Figure 45</u> and <u>Figure 46</u>.

1. To install the loopback jack, simply disconnect the RJ-48 (8-wide) connector (typically an H700-383 cable) at the appropriate interface point and connect the loopback jack in series with the DS1 span. See <u>Figure 42</u> through <u>Figure 46</u>.

2. Plug the H700-383 cable from the ICSU into the female connector on the loopback jack.

3. Plug the male connector on the loopback jack cable into the network interface point.

   ### $\Rightarrow$ NOTE:
   Do not remove the loopback jack after installation. This is not a test tool and should always be available to remotely test a DS1 span.

Administering the Loopback Jack

1. At the management terminal, enter **change DS1 *location***.

   Location is the DS1 interface circuit pack corresponding to the loopback jack.

2. Be sure the **near-end CSU** type is set to **integrated**.

3. On page 2 of the form, change the **supply CPE loopback jack power field** to **y**.

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13 DS1/T1 CPE Loopback Jack
Loopback Testing with a Smart Jack 131

Setting this field to **y** informs the technician that a loopback jack is present on the facility and allows the technician to determine that the facility is available for remote testing.

4. Enter **save translation** to save the new information.

Loopback Testing with a Smart Jack

The loopback jack and smart jack isolate faults by dividing the DS1 span into 3 sections (see Figure 42, Figure 43, and Figure 44):

- From the 120A2 (or later) ICSU to the loopback jack

- From the loopback jack to the smart jack (network interface point)

- From the smart jack to the CO

The first 2 sections are your responsibility. The last is the responsibility of the DS1 service provider.

Testing the DS1 Span from the ICSU to the Loopback Jack

The DS1 span test has 2 parts.

- Checking for circuit connectivity

    The first part of the test powers-up the loopback jack and sends a signal from the DS1 circuit pack, through the wiring, to the loopback jack. The test allows about 10 seconds for the signal to loop around the loopback jack and return to the DS1 circuit pack. Then it sends the results to the management terminal and proceeds to the second part of the test.

- The second part of the test sends the standard, 3-in-24 DS1 stress-testing pattern from the DS1 board, through the loopback jack, and back to a bit error detector and counter on the DS1 board. A bit-error rate counter displays the results on the management terminal until you terminates the test.

Always perform both parts of the test. Proceed as follows.

Checking the integrity of local equipment

Before you go any further, make sure that the the problem is actually on the DS1 span by testing the equipment that connects to the span at the near end.

1. Test the DS1 circuit pack, and perform any needed maintenance or repairs.

2. Test the ICSU, and perform any needed maintenance or repairs.

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13 DS1/T1 CPE Loopback Jack
Loopback Testing with a Smart Jack　　　　　　　　　　　　　　　　　　　　　　132

Busying out the DS1 circuit pack

Now take the DS1 circuit out of service.

1. Once you are sure that the DS1 circuit pack and ICSU are functioning correctly, go to the management terminal, and busy out the DS1 circuit pack by entering

   busyout board *UUCCSS*

   where ***UU*** is the cabinet number, ***CC*** is the carrier number, and ***SS*** is the slot number of the DS1 board.

Administering the DS1 for the test

1. At the management terminal, open the DS1 administration form. Enter

   change DS1 *UUCCSS*

   where ***UU*** is the cabinet number, ***CC*** is the carrier number, and ***SS*** is the slot number of the DS1 board.

2. Make sure that the **near-end csu type** field is set to **integrated**.

3. Change to page 2 of the DS1 administration form, and confirm that the value of the **TX LBO** field is **0dB**.

4. If the value of the **TX LBO** field is not **0dB**, record the current value. Then set the **TX LBO** field to **0dB** for testing.

5. Press ENTER to make the changes, CANCEL to quit without changes.

Testing the integrity of the loopback circuit

Now perform the first part of the actual loopback test.

1. At the management terminal, enter

   test DS1-loop *UUCCSS* cpe-loopback-jack

   where ***UU*** is the cabinet number, ***CC*** is the carrier number, and ***SS*** is the slot number of the DS1 board.

   The loopback jack powers up. Active, DS1 facility alarms (if any) clear. After about 20 seconds, the first set of results appears on the terminal.

2. If **FAIL** appears on the terminal display, there may be a fault in the wiring between the ICSU and the loopback jack or the loopback jack may itself be faulty. Isolate the problem by replacing the loopback jack and repeating step 1.

3. If **FAIL** still appears after the loopback jack has been replaced, suspect a wiring problem. Replace the cable between the ICSU and the loopback jack. Then repeat step 1.

4. When **PASS** appears on the terminal, proceed with the second part of the test, checking the integrity of transmitted data.

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Testing the integrity of data sent over the loop

Now perform the second part of the test, checking for data errors.

> ⟹ **NOTE:**
> The loss of signal (LOS) alarm (demand test #138) is not processed
> during this test while the 3-in-24 pattern is active.

Clearing the results of previous tests

1. Zero out the bit-error counter. At the management terminal, enter

   clear meas DS1 loop *UUCCSS*

   where *UU* is the cabinet number, *CC* is the carrier number, and *SS* is the
   slot number of the DS1 board.

2. Zero out the performance measurement counter. At the management
   terminal, enter

   clear meas DS1 log *UUCCSS*

   where *UU* is the cabinet number, *CC* is the carrier number, and *SS* is the
   slot number of the DS1 board.

3. Zero out the ESF error count. At the management terminal, enter

   clear meas DS1 esf *UUCCSS*

   where *UU* is the cabinet number, *CC* is the carrier number, and *SS* is the
   slot number of the DS1 board.

Running the data test

1. Display the bit error count. At the management terminal, enter

   list meas DS1 sum *UUCCSS*

   where *UU* is the cabinet number, *CC* is the carrier number, and *SS* is the
   slot number of the DS1 board.

2. Step through the table below to troubleshoot.

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If	Then
The value of the **Test: cpe-looback-jack** field is **Pattern 3-in-24**	The loopback jack test is active.
The value of the **Synchronized** field is **N**	Retry the test 5 times.
The value of the **Synchronized** field remains **N** after 5 tries.	Excessive bit errors are likely. Check for intermittent connections or broken wires in an SPE receive or transmit pair, and repair as necessary. Then repeat step 1.
The value of the **Bit-error count** field is **non-zero**	Repeat step 1 several times.
The value of the **Synchronized** is **Y**	The DS1 circuit pack has synchronized to the looped 3-in-24 pattern and is counting bit errors in the pattern.
The value of the **Bit-error count** field pegs at **75535** or increments by 100s or 1000s each time you repeat step 1.	Suspect loose or corroded connections, severe crosstalk, or impedance imbalances between the two conductors of the receive or transmit pair. Wiring may need replacement.
The value of the **Bit-error count** field is **0**	There are no obvious wiring problems. Verify this by repeating step 1 a 1- to 10-minute intervals until you are certain.
	If the test reports no errors for 1 minute, the error rate is less than 1 in 10^8. If the test reports no errors for 10 minutes, the error rate is less than 1 in 10^9.

3. Once you are fairly certain that the test is reporting no errors (after at least 1 error-free minute), confirm that the 3-in-24 pattern error detector is operating. Enter

   test DS1-loop *UUCCSS* inject-single-bit-error.

   where *UU* is the cabinet number, *CC* is the carrier number, and *SS* is the slot number of the DS1 board.

4. Display the bit error count again. At the management terminal, enter

   list meas DS1 sum *UUCCSS*

   where *UU* is the cabinet number, *CC* is the carrier number, and *SS* is the slot number of the DS1 board.

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Loopback Testing with a Smart Jack　　　　　　　　　　　　　　　　135

If	Then
The value of the **Bit-error count** field is greater than **1**	Replace the ICSU, and retest.
The value of the **Bit-error count** field is still greater than **1** after you replace the ICSU.	Replace the DS1 circuit pack, and retest.
The value of the **Bit-error count** field is **1**	The test passed.

5. End the test. Enter

   test DS1-loop *location* end cpe-loopback-jack-test

6. Wait about 30 seconds for the DS1 to reframe on the incoming signal and clear DS1 facility alarms.

If	Then
Loopback termination fails with an error code of 1313.	The span is still looped somewhere, possibly at the loopback jack, at the ICSU, or somewhere in the network.
The red LED on the loopback jack is on.	Replace the ICSU, and re-run the test.
Loopback termination still fails.	Replace the DS1 circuit pack, and repeat the test
The DS1 cannot frame on the incoming span's signal after the loopback jack power down.	There is something wrong with the receive signal into the loopback jack from the dumb block or the smart jack.
The span failed the service provider's loopback test.	The problem is in the service provider's network.

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If	Then
The service provider successfully loop tested the span, up to the smart jack.	The wiring between the loopback jack and the smart jack is suspect. Test, and make repairs, as needed.
You cannot locate and repair the problem in the time available and must termnate the test.	The test will not terminate normally in the absence of a good framing signal. You have to reset the circuit pack. Enter **reset board UUCCSS** where **UU** is the cabinet number, **CC** is the carrier number, and **SS** is the slot number of the DS1 board.
The test terminated normally.	Proceed with "Restoring DS1 administration", below.

Restoring DS1 administration

1. At the management terminal, open the DS1 administration form. Enter

   change DS1 UUCCSS

   where **UU** is the cabinet number, **CC** is the carrier number, and **SS** is the slot number of the DS1 board.

2. Change to page 2 of the DS1 administration form.

3. Change the value of the **TX LBO** field to the original value that you wrote down when you were "Administering the DS1 for the test" on page 132.

4. Press ENTER to make the changes, CANCEL to quit without changes.

Releasing the DS1 circuit pack

1. Release the DS1 circuit pack. From the management terminal, enter

   release board UUCCSS

   where **UU** is the cabinet number, **CC** is the carrier number, and **SS** is the slot number of the DS1 board.

2. Leave the loopback jack in place.

Testing the DS1 Span from the Smart Jack to the Network Interface Termination or Fiber Multiplexer (MUX)

1. Have the service provider run a smart-jack loopback test against the network interface wiring that links the smart jack to the CO (Section 3 in Figure 42).

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2. If the tests fails, there is a problem on the network side. Have the service provider correct it.

Testing the DS1 Span from the Loopback Jack to the Smart Jack

Test the short length of customer premises wiring between the loopback jack and the smart jack (Section 2 in the following 3 figures) using a loopback that overlaps this section of the span.

- Have the DS1 service provider at the CO end run a local ICSU line loopback test.

- Have the DS1 service provider at the CO end run a local DS1 payload loopback test.

- Run a far-end ICSU line loopback, using the procedure below.

    > **NOTE:**
    > This test cannot isolate the problem if there are problems in the wiring between the far-end CO and the far-end ICSU. You must coordinate this test with the DS1 service provider.

    1. From the management terminal, enter

        test DS1-loop *UUCCSS* far-csu-loopback-test-begin

        where *UU* is the cabinet number, *CC* is the carrier number, and *SS* is the slot number of the DS1 board.

    2. Examine the bit-eror counts, as in "Testing the integrity of data sent over the loop" on page 133."

    3. Terminate the test. Enter

        test DS1-loop *location* end-loopback/span-test.

3. If the tests fails and the there were no problems "Testing the DS1 Span from the ICSU to the Loopback Jack" or "Testing the DS1 Span from the Smart Jack to the Network Interface Termination or Fiber Multiplexer (MUX)", there is a problem between the loopback jack to the smart jack. Work with the service provider to isolate the fault.

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prdfcs7 KLC 012797

1. Span section 1

2. Span section 2

3. Span section 3

4. 120A2 (or later) integrated channel service unit (ICSU)

5. RJ-48 to network interface (Up to 1000 feet) (305 m)

6. Loopback jack

7. Network interface smart jack

8. Interface termination or fiber multiplexer (MUX)

9. Central office

Figure 42.   Network Interface at Smart Jack

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Loopback Testing with a Smart Jack   139

prdfcs4 KLC 012797

1. Span section 1

2. Span section 2

3. Span section 3

4. 120A2 (or later) integrated channel service unit (ICSU)

5. RJ-48 to network interface (up to 1000 feet/305 m)

6. Loopback jack

7. Dumb block (extended demarcation)

8. Network interface smart jack

9. Interface termination or fiber multiplexer (MUX)

10. Central office

Figure 43.   Network Interface at Extended Demarcation Point (Smart Jack Inaccessible)

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Loopback Testing Without a Smart Jack   140

prdfcs5 KLC 012797

1. Span section 1

2. Span section 2

3. Span section 3

4. 120A2 (or later) integrated channel service unit (ICSU)

5. RJ-48 to network interface (up to 1000 feet/305 m)

6. Loopback jack

7. Dumb block (extended demarcation)

8. Network interface smart jack

9. Interface termination or fiber multiplexer (MUX)

10. Central office

11. Dumb block to smart jack RJ-48

Figure 44.   Network Interface at Extended Demarcation Point (Smart Jack Accessible)

Loopback Testing Without a Smart Jack

When the loopback jack is added to a span that does not contain a smart jack, the span is divided into 2 sections: from the ICSU to the loopback jack and from the loopback jack to the central office (CO). Section 2 includes the short cable from the loopback jack to the dumb block demarcation point (part of the loopback jack). This cable is the only part of Section 2 that is part of customer premises wiring. It is not covered in the loopback jack's loopback path. See <u>Figure 45</u> and <u>Figure 46</u>.

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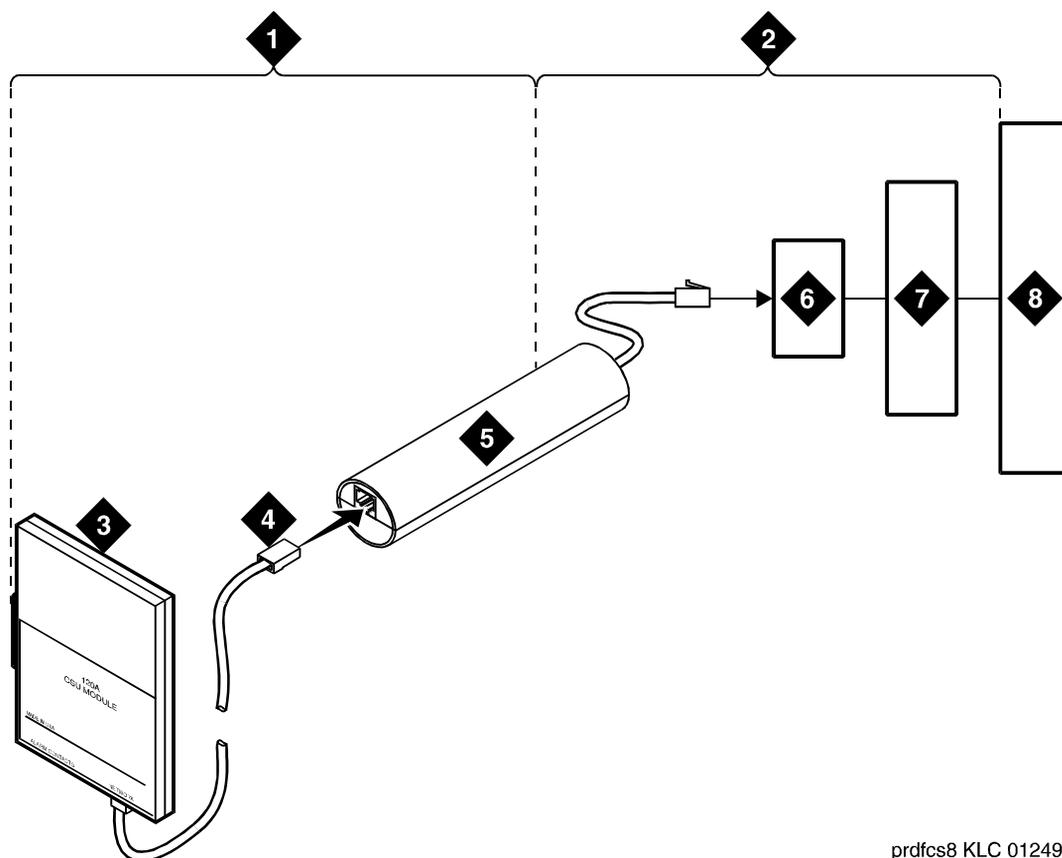
prdfcs8 KLC 012497

1. Span section 1

2. Span section 2

3. 120A2 (or later) Integrated channel service unit (ICSU)

4. RJ-48 to network interface (Up to 1000 feet/305 m)

8. Loopback jack

9. Dumb block (demarcation point)

10. Interface termination or fiber multiplexer (MUX)

11. Central office

Figure 45.   Network Interface at "Dumb" Block

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Loopback Testing Without a Smart Jack

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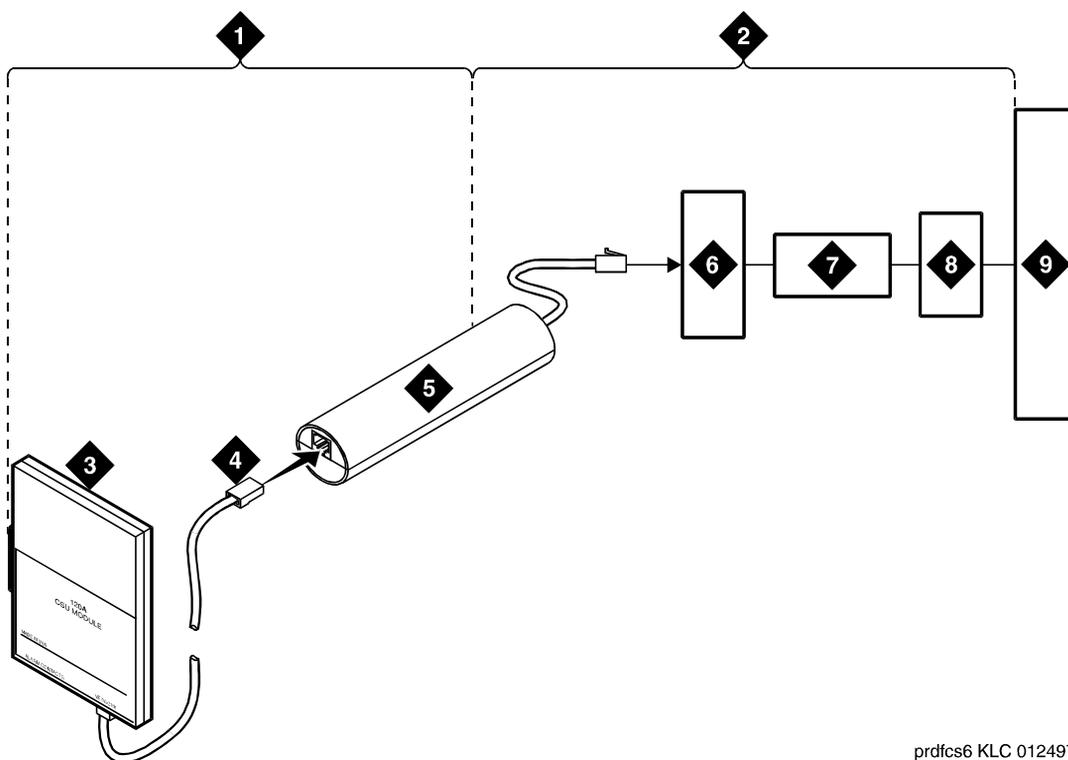
prdfcs6 KLC 012497

1. Span section 1

2. Span section 2

3. 120A2 (or later) integrated channel service unit (ICSU)

4. RJ-48 to network interface (Up to 1000 feet/305 m)

5. Loopback jack

6. Dumb block (demarcation point)

7. Repeater

8. Fiber multiplexer (MUX)

9. Central office

Figure 46.   Network Interface at "Dumb" Block with Repeater Line to Fiber MUX

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Loopback Testing Without a Smart Jack   143

You are responsible for finding and correcting problems in the customer wiring
(section 1 and the loopback cable portion of section 2). The DS1 service provider
is responsible for finding and correcting problems in the majority of section 2.

Proceed as follows.

1. Test customer premises wiring from the ICSU to the loopback jack, as
   described in the "DS1 Span Test" section.

2. Test the loopback jack-to-*dumb* block and *dumb* block-to-CO wiring
   (section 2 in Figure 45). This can be done using a loopback that
   "overlaps" the section of the span. Any of the following loopbacks can do
   this:

   ■ The local ICSU's line loopback, which the DS1 service provider at
     the CO end typically activates, tests, and then deactivates.

   ■ The local DS1 interface's payload loopback, which the DS1 service
     provider at the CO end activates and tests.

   ■ The far-end ICSU's line loopback. Activate this test at the
     management terminal by entering **test DS1-loop** *location* **far-csu-
     loopback-test-begin**. Terminate this test by entering **test DS1-loop**
     location **end-loopback/span-test**. Bit error counts are examined
     as described in the "DS1 Span Test" section. This test only isolates
     problems to Section 2 wiring if there are no problems in the wiring
     between the far-end CO and the far-end ICSU. Coordinate this test
     with the DS1 service provider.

     Failure of any of the above tests (a, b, or c) indicate a problem in
     Section 2. This could mean bad loopback jack -to-"dumb" block
     cabling, but is more likely to indicate a problem somewhere
     between the "dumb" block and the CO. This is the responsibility of
     the DS1 service provider.

     If the DS1 Span Test confirms that there are no problems in Section
     1, the technician should proceed as follows to avoid unnecessary
     dispatch.

     1. Identify and contact the DS1 service provider.

     2. Inform the DS1 provider that loopback tests of the CPE
        wiring to the "dumb" block (section 1) showed no problems.

     3. If the far-end ICSU line loopback test failed, inform the DS1
        provider.

     4. Request that the DS1 provider perform a loopback test of
        their portion of the Section 2 wiring by sending someone out
        to loop Section 2 back to the CO at the "dumb" block.

        If this test fails, the problem is in the service provider's
        wiring.

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If the test passes, the problem is in the cable between the loopback jack and the "dumb" block. Replace the loopback jack.

Configurations Using Fiber Multiplexers

Use the loopback jack when customer premises DS1 wiring connects to an on-site fiber multiplexer (MUX) and allows wiring to the network interface point on the MUX to be remotely tested. This requires that ICSUs be used on DS1 wiring to the MUX.

Fiber MUXs can take the place of Interface termination feeds as shown in Figure 42, Figure 43, Figure 44, and Figure 45. Test these spans using the same procedures as metallic spans. Note the following points:

1. Fiber MUXs may have loopback capabilities that can the service provider can activate from the CO end. These may loop the signal back to the CO or back to the DS1 board. If the MUX provides the equivalent of a line loopback on the "problem" DS1 facility, activate it after a successful loopback jack test, and use it to isolate problems to the wiring between the loopback jack and the MUX.

2. Be aware that there are installations that use repeatered metallic lines between the MUX and the "dumb" block. These lines require DC power for the repeaters and this DC power is present at the "dumb" block interface to the CPE equipment. *A loopback jack is required in this configuration to properly isolate and terminate the DC power.*

To check for the presence of DC, make the following 4 measurements at the network interface jack:

1. From transmit tip (T, Pin 5) to receive tip (T1, Pin 2)

2. From transmit ring (R, Pin 4) to receive ring (R1, Pin 4)

3. From transmit tip (T, Pin 5) to transmit ring (R, Pin 4)

4. From receive tip (T1, Pin 2) to receive ring (R1, Pin 4)

All measurements should read 0 (zero) volts DC. For pin numbers and pin designations, refer to *Integrated Channel Service Unit (ICSU) Installation and Operation*, 555-230-193.

Operating Characteristics

If a TN474F or TN777E and a 120A2 were installed in a system running pre-G3V3 software and the software is later upgraded to G3V3 Release 3 or later, remove and re-install the DS1 circuit pack so that the ICSU administration fields will appear on the DS1 administration screen.

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ISDN Converters and Adapters

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Converters for Single-Carrier Cabinets

PRI to DASS and PRI to DPNSS Converters

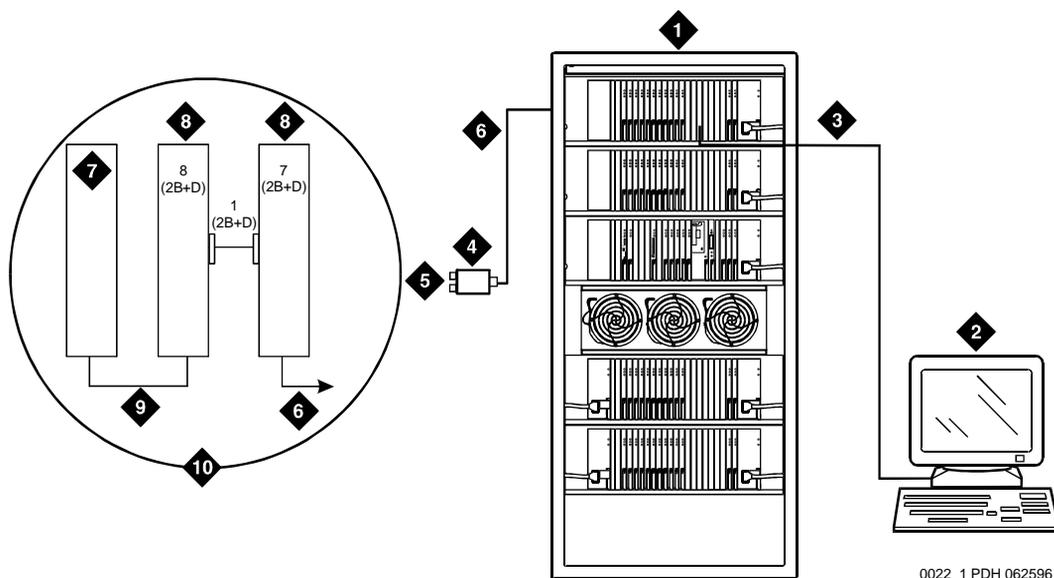Figure 47 shows typical connections from the TNCCSC-1 PRI to DASS converter or the TNCCSC-2 PRI to DPNSS converters to the coaxial facility.

1. To TN474F DS1 circuit pack and either a TNCSCC-1 PRI to DASS converter or a TNCSCC-2 PRI to DPNSS converter circuit pack

2. DEFINITY administration terminal

3. RS-232 cable to Front of PRI converter circuit pack

4. 888B coaxial converter

5. Coaxial connection to 2 Mbps facility
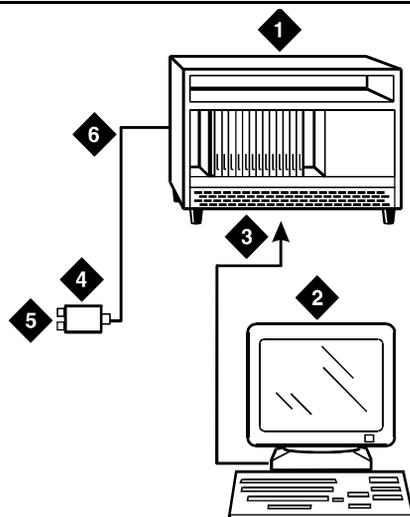
6. Coaxial cable from PRI converter circuit pack to coaxial converter

Figure 47.   Typical DASS or DPNSS converter Cabling

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1. Plug the DEFINITY administration terminal into the RS-232 connector on the front of the PRI converter circuit pack.

2. Connect the coaxial Y-cable from the TN474F to the PRI converter circuit pack.

3. Connect the opposite end of the Y-cable to the 888B coaxial converter.

PRI to BRI Converter

Figure 48 shows typical connections from the TNPRI/BRI converter to the coaxial facility.

1. To TN474F DS1 circuit pack and TNPRI/BRI converter circuit pack
2. DEFINITY administration terminal
3. RS-232 cable to front of converter circuit pack
4. 888B coaxial converter
5. Coaxial connection to 2 MB per second facility
6. Coaxial cable from PRI converter circuit pack to coaxial converter
7. TN474F circuit pack
8. TNPRI/BRI converter circuit pack
9. Jumper coaxial cable
10. Inset showing connections on rear of carrier

Figure 48. Typical PRI to BRI Converter Cabling

NOTE:
The inset shows details of the cable connections between the circuit packs. Connect the DEFINITY administration terminal to the RS-232 connector on the front of the PRI converter circuit pack.

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Converters for Multi-Carrier Cabinets

PRI to DASS and PRI to DPNSS Converters

1. Connect the DEFINITY administration terminal to the RS-232 connector on the front of the PRI converter circuit pack.

   Figure 49 shows typical connections from the TNCCSC-1 PRI to DASS converter or the TNCCSC-2 PRI to DPNSS converters to the coaxial facility.

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1. To TN474F DS1 circuit pack and either a TNCSCC-1 PRI to DASS converter or a TNCSCC-2 PRI to DPNSS converter circuit pack

2. DEFINITY administration terminal

3. RS-232 cable to front of PRI converter circuit pack

4. 888B coaxial converter

5. Coaxial connection to 2 Mbps facility

6. Coaxial cable from PRI converter circuit pack to coaxial converter

Figure 49.   Typical DASS or DPNSS Converter Cabling

PRI to BRI Converter

Figure 50 shows typical connections from the TNPRI/BRI converter to the coaxial facility. The DEFINITY administration terminal is connected to the RS-232 connector on the front of the PRI converter circuit pack.

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1. TN474F DS1 circuit pack and TNPRI/BRI converter circuit pack

2. DEFINITY administration terminal

3. RS-232 cable to front of converter circuit pack

4. 888B 75 Ohm coaxial converter

5. Coaxial connection to 2 Mbps facility

6. Coaxial cable from PRI converter circuit pack to coaxial converter

7. TN474F circuit pack

8. TNPRI/BRI converter circuit pack

9. Jumper coaxial cable

10. Inset showing connections on rear of carrier

Figure 50.   Typical PRI to BRI Converter Cabling

NOTE:
The inset shows details of the cable connections between the circuit packs.

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15 Stratum 3 Clock
Set Clock Options   149

Stratum 3 Clock

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Set Clock Options

There are four sets of option switches on the clock. Proceed as follows.

1. Set the options on the clock input board (CI) per <u>Table 23</u>.

Table 23.   CI Option Switch Settings

Switch	Function	Position
1	T1 select	OFF = enable (default) ON = disable
2	CC select	OFF = enable ON = disable (default)
3	Framing select	OFF = ESF ON = D4 (default)
4	BX.25	OFF = enable ON = disable (default)

2. Set the options on the Stratum 3 Clock board (ST3) per <u>Table 24</u>.

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Set Clock Options

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Table 24.   ST3 Clock Board Option Switch Settings

Switch	Status/Results
SW1 Minor alarm control	OFF = minor alarm never output ON = minor alarm is output if holdover occurs
SW2 Major Alarm Control	OFF = major alarm is output and fail lamp lights if 5 VDC power is lost and 4 kHz output is lost ON = major alarm is output and fail lamp lights if 5 VDC power is lost and 4 kHz output is lost and holdover occurs

➡ **NOTE:**
Only SW 1 and SW2 are used. SW1 controls the output of alarm signals from the Stratum 3 Clock board.

3. Set the options on the Composite Clock Timing Output Board (TOCA) per Table 25.

4. Set the Stratum 2/Stratum 3 switch to the STRATUM 3 position.

Table 25.   Composite Clock Timing Output Board (TOCA)

Switch		Range in feet (meters)						
500	1000	1.0 (0.3)	500 (152)	1000 (305)	1500 (457)	2000 (710)	2500 (772)	3000 (914)
OFF	OFF							
ON	OFF							
OFF	ON							
ON	ON							

➡ **NOTE:**
Set switches 1 and 2 according to the distance from the Stratum 3 clock to the DEFINITY System. Set switch 3 to ON. Set switch 4 to OFF.

Cabling the Stratum 3 Clock

Figure 51 shows typical connections to a Stratum 3 Clock cabinet. Connections are made through the yellow field cross-connect. A custom Y-cable (H700-274) connects the CSU to the DS1 circuit pack and taps off the input for the Stratum 3

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Set Clock Options   *151*

Clock. A resistor built into the cable to provides the necessary isolation between the system and the clock. The Y-cable plugs directly into the CSU and connects to standard cables for interface to the system and the yellow field on the MDF.

The H700-307 cable connects the system end of the Y-cable to a DS1 circuit pack (shown as TN474F, TN722B, or TN777E). The B25A cable connects the clock end of the Y-cable to the yellow field on the MDF.
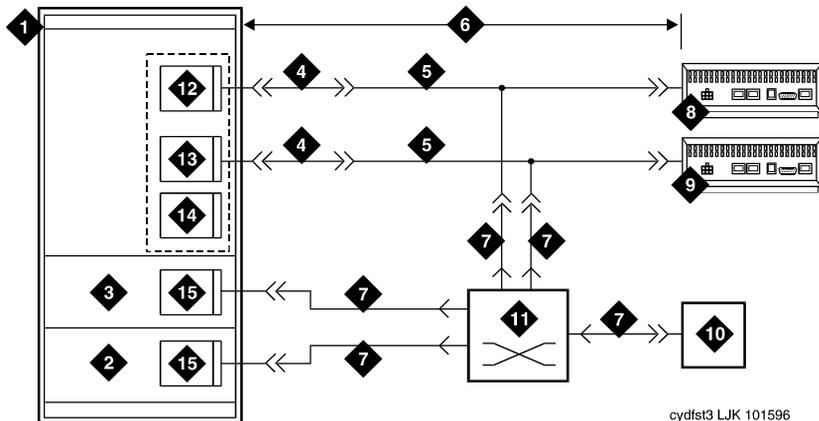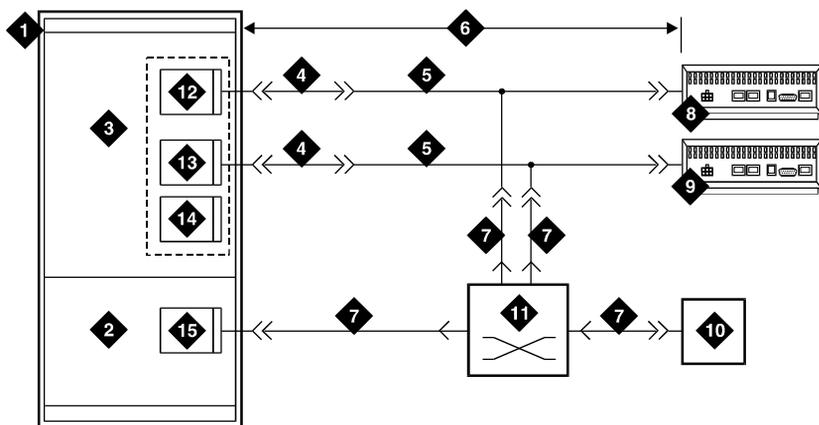
cydfst3 LJK 101596

1. PPN cabinet

2. "A" position

3. "B" position

4. H700-307 cable

5. H700-274, G2 cable

6. 1300 feet (397 m)

7. B25A male to female cables

8. Secondary CSU

9. Primary CSU

10. Stratum 3 Clock

11. MDC

12. TN474F DS1/E1 interface circuit pack

13. TN722B DS1 tie trunk circuit pack

14. TN777E DS1 interface circuit pack

15. TN780 tone-clock circuit pack

Figure 51.   Typical Connections to Stratum 3 Clock

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The H700-307 cable connects the system end of the Y-cable to a DS1 circuit pack (shown as TN474, TN722, or TN777). The B25A cable connects the clock end of the Y-cable to the yellow field cross-connect.

Stratum 3 Clock Wiring Installation Procedure

1. Connect the B25A cables from the TN780 connector panel slot on the system cabinet and the Stratum 3 Clock to the cross-connect module in the yellow field.

2. Connect the CSU plug end of the H-700-274 Y-cable to the primary CSU. Route an H700-307 cable from the DS1 connector panel slot on the system cabinet to the connector on the "SYSTEM" end of the Y-cable.

3. Route a B25A cable from the "CLOCK" end of the Y-cable to the cross-connect module in the yellow field.

4. Repeat steps 2 and 3 for the secondary CSU. The maximum allowable cabling distance between the Stratum 3 clock and the CSU is shown in the table below.

Table 26.   Maximum Cabling Distance for Different CSUs

Channel Service Unit (CSU)	Maximum Cabling Distance
551A	85 feet (27 m)
551V	85 feet (27 m)
551V EFS/R	755 feet (199.7 m)
EFS T1	755 feet (199.7 m)

5. For standard reliability systems, refer to Y-cable to cross-connect the TN780 and "CLOCK" end connections to the Stratum 3 clock connections on the cross-connect module.

6. For high or critical reliability systems, refer to table below to cross-connect the TN780 and "CLOCK" end connections to the Stratum 3 clock connections on the cross-connect module.

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Table 27.   Y-Cable Clock-End Cross-Connects for Reliability

From Stratum 3 Clock		To Y-cable clock end (primary)		To Y-cable clock end (secondary)	
Lead Name	Lead Color/ Terminal	Lead Name	Lead Color/ Terminal	Lead Name	Lead Color/ Terminal
RREF1	W-BL/1		V-O/43		
TREF1	BL-W/2		O-V/44		
RREF2	W-O/3				V-O/43
TREF2	O-W/4				O-V/44

Table 28.   TN780-Carrier Cross-Connects for Standard Reliability

From Stratum 3 Clock		To TN780 carrier A		To TN780 carrier B	
Lead Name	Lead Color/ Terminal	Lead Name	Lead Color/ Terminal	Lead Name	Lead Color/ Terminal
BCLKRTN	R-O/13	ALRM5B	V-G/45		
BCLKLST	O-R/14	ALRM5A	G-V/47		
BPWRRTN	R-BR/17	ALRM4B	BK-BL/21		
BPWRLST	BR-R/18	ALRM4A	BL-BK/22		
REF2RTN	W-BR/7	ALRM3B	R-BR/17		
REF2LST	BR-W/8	ALRM3A	BR-R/18		
SCLKRTN	R-BL/11	ALRM2B	R-BL/11		
SCLKLST	BL-R/12	ALRM2A	BL-R/12		
SPWRRTN	R-G/15	ALRM1B	Y-BL/31		
SPWRLST	G-R/17	ALRM1A	BL-Y/32		
BCLKRTN	R-O/13	ALRM5B	V-G/45		
REF1RTN	W-G/5	ALRM0B	W-BR/7		
REF1LST	G-W/7	ALRM0A	BR-W/8		
CCA01R	R-S/19	EXTSYN0T	V-BL/41		

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Table 28.   TN780-Carrier Cross-Connects for Standard Reliability

From Stratum 3 Clock		To TN780 carrier A		To TN780 carrier B	
Lead Name	Lead Color/ Terminal	Lead Name	Lead Color/ Terminal	Lead Name	Lead Color/ Terminal
CCA01T	S-R/20	EXTSYN0R	BL-V/42		
CCB01R	BK-BL/21	EXTSYN1T	Y-G/35		
CCB01T	BL-BK/22	EXTSYN1R	G-Y/37		

Table 29.   Y-Cable Clock-End Cross-Connects for High or Critical Reliability

From Stratum 3 Clock		To Y-cable clock end (primary)		To Y-cable clock end (secondary)	
Lead Name	Lead Color/ Terminal	Lead Name	Lead Color/ Terminal	Lead Name	Lead Color/ Terminal
RREF1	W-BL/1		V-O/43		
TREF1	BL-W/2		O-V/44		
RREF2	W-O/3				V-O/43
TREF2	O-W/4				O-V/44

Table 30.   Circuit-Pack Cross-Connects for High or Critical Reliability

From Stratum 3 Clock		To TN780 carrier A		To TN780 carrier B	
Lead Name	Lead Color/ Terminal	Lead Name	Lead Color/ Terminal	Lead Name	Lead Color/ Terminal
BCLKRTN	R-O/13	ALRM5B	V-G/45	ALRM5B	V-G/45
BCLKLST	O-R/14	ALRM5A	G-V/47	ALRM5A	G-V/47
BPWRRTN	R-BR/17	ALRM4B	BK-BL/21	ALRM4B	BK-BL/21
BPWRLST	BR-R/18	ALRM4A	BL-BK/22	ALRM4A	BL-BK /22
REF2RTN	W-BR/7	ALRM3B	R-BR/17	ALRM3B	R-BR/17
REF2LST	BR-W/8	ALRM3A	BR-R/18	ALRM3A	BR-R/18

Continued on next page

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Table 30.   Circuit-Pack Cross-Connects for High or Critical Reliability

From Stratum 3 Clock		To TN780 carrier A		To TN780 carrier B	
Lead Name	Lead Color/ Terminal	Lead Name	Lead Color/ Terminal	Lead Name	Lead Color/ Terminal
SCLKRTN	R-BL/11	ALRM2B	R-BL/11	ALRM2B	R-BL/11
SCLKLST	BL-R/12	ALRM2A	BL-R/12	ALRM2A	BL-R/12
SPWRRTN	R-G/15	ALRM1B	Y-BL/31	ALRM1B	Y-BL/31
SPWRLST	G-R/17	ALRM1A	BL-Y/32	ALRM1A	BL-Y/32
REF1RTN	W-G/5	ALRM0B	W-BR/7	ALRM0B	W-BR/7
REF1LST	G-W/7	ALRM0A	BR-W/8	ALRM0A	BR-W/8
CCA01R	R-S/19	EXTSYN0T	V-BL/41		
CCA01T	S-R/20	EXTSYN0R	BL-V/42		
CCB01R	BK-BL/21	EXTSYN1T	Y-G/35		
CCB01T	BL-BK/22	EXTSYN1R	G-Y/37		
CCA02R	BK-O/23			EXTSYN0T	V-BL/41
CCA02T	O-BK/24			EXTSYN0R	BL-V/42
CCB02R	BK-G/25			EXTSYN1T	Y-G/35
CCB02T	G-BK/26			EXTSYN1R	G-Y/37

7. Bridge the jumper wires to cross-connect from the TN780 in A and B carriers to the Stratum 3 Clock.

8. Dress the cables down sides of the cabinet and run through the cable Slack Manager, if provided.

9. Administer the switch for the clock .

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16 Busy Tone Disconnect Equipment for Non-US Installations

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Busy Tone Disconnect Equipment for Non-US Installations

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The customer-provided busy-tone disconnect adjunct detects disconnects of incoming calls on loop-start, 2-wire, analog trunks. In some countries outside the United States, the PSTN sends tones in the voice band instead of line disconnect signals. Figure 52 shows typical connections.

cydf057 RPY 123097
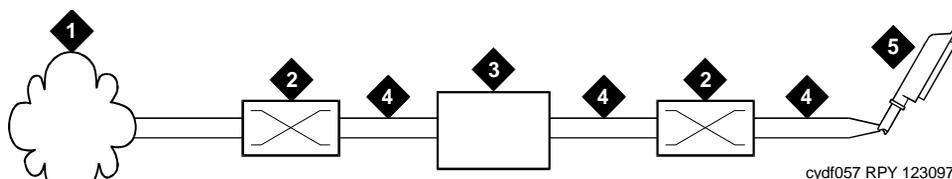
1. Public switched telephone network

2. Main distribution frame

3. Busy tone disconnect device

4. Tip and ring wires

5. To loop-start, central-office, trunk circuit pack such as TN475B or TN747B

Figure 52.   Typical Cabling for Busy Tone Disconnect

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Call Detail Recording Option Settings

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Connecting CDR Equipment to the G3V4

The interface between the G3V4 system and CDR equipment may be a

- Data module (see Chapter 4, "Data Modules and Asynchronous Data Units", for recommended settings)

- Modem (see Chapter 5, "External Modems", and the modem vendor's documentation for recommended settings)

- TN726 data line circuit pack and an asynchronous data unit

CDR equipment can connect directly to the DCE connector (EIA Port) on the rear of the control carrier in all systems except R7csi. Data modules or modems are not required. In R7csi, CDR equipment connects to the MODEM (P2) connector on the processor interface cable.

Using a Printer as the CDR Output Device

You can use a printer can an output-receiving device for CDR. The recommended option settings for the 572 printer are shown in Table 31.

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Using a Printer as the CDR Output Device

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Table 31.   572 Printer Used with Management Terminal, CDR, or Journal Printer

Function	Function Name	Menu	Menu Status
01	FORM LENGTH	09	11
02	LPI	01	6
03	CPI	01	10
04	LQ or NLQ	01	LQ
05	BUZZER	01	ON
06	FONT	02	FONTCART
07	RESOLUTION	01	144
11	BUFFER	02	N-LINE
13	PW ON MODE	01	ON-LINE
14	DIRECTION	01	B1-DIR.1
15	BUFF FULL	02	LF + CR
16	P.E.	01	ACTIVE
17	AUTO CARRIAGE RETURN (CR)	01	CR + LF
18	ZERO	01	0
22	AUTO LINE FEED	01	CR ONLY
31	1'' SKIP	01	OFF
32	CHAR.SET (GO, GL)	02	USA
33	CHAR.SET (G1, GR)	01	UK
34	CHAR SET (G2)	03	GE
35	CHAR SET (G3)	07	LINE DRAWING
81	OFF-LINE STATE	01	ALL RECEIVE
82	DSR	02	OFF
83	REQUEST TO SEND (RTS) TIMING	01	RTS
84	CD	02	OFF
85	CLEAR TO SEND (CTS)	02	OFF
91	OVER RUN	02	256
92	DATA BIT	02	8

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Table 31.   572 Printer Used with Management Terminal, CDR, or Journal
            Printer — *Continued*

Function	Function Name	Menu	Menu Status
93	PROTOCOL	03	XON/XOFF
94	STOP BIT	01	1
95	PARITY	01	NONE
96	PBS	01	9600

Using Other Equipment as the CDR Output Devices

A CDR, a 94A local storage unit (LSU), or customer premises equipment (CPE) can be used as the output receiving device.

Sources of Administration Information

Administration procedures for CDR equipment are provided in *DEFINITY Enterprise Communications Server R7 Administrator's Guide*.

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DEFINITY INADS

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The DEFINITY ECS Initialization and Administration System (INADS) provides analog loopback connections and PARTNER® connections for remote alarming and maintenance when direct connection to the public network is not possible.

⇒ NOTE:

These instructions are for DEFINITY ECS Release 7r systems using the TN1748 system access/maintenance (SYSAM) circuit pack. ISDN is required.

Analog Loopback

Analog loopback connects the INADS port to an analog station port. It switches the call through the AUX connector on the processor carrier of the DEFINITY ECS, across an analog line circuit pack, and out to the public network. Direct Inward Dialing (DID) is optional.

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cydfmdf RPY 040698

1. Release 7r PPN cabinet

2. AUX connector on processor carrier
   (use wire pair 50 and 25, tip and ring)

3. Port carrier (with analog line circuit pack)

4. B25A 25-pair cable to AUX

5. Main distribution frame (MDF)

6. B25A 25-pair cable to circuit pack

7. PSTN or DEFINITY extension

Figure 53.   Analog Loopback Connections R7r
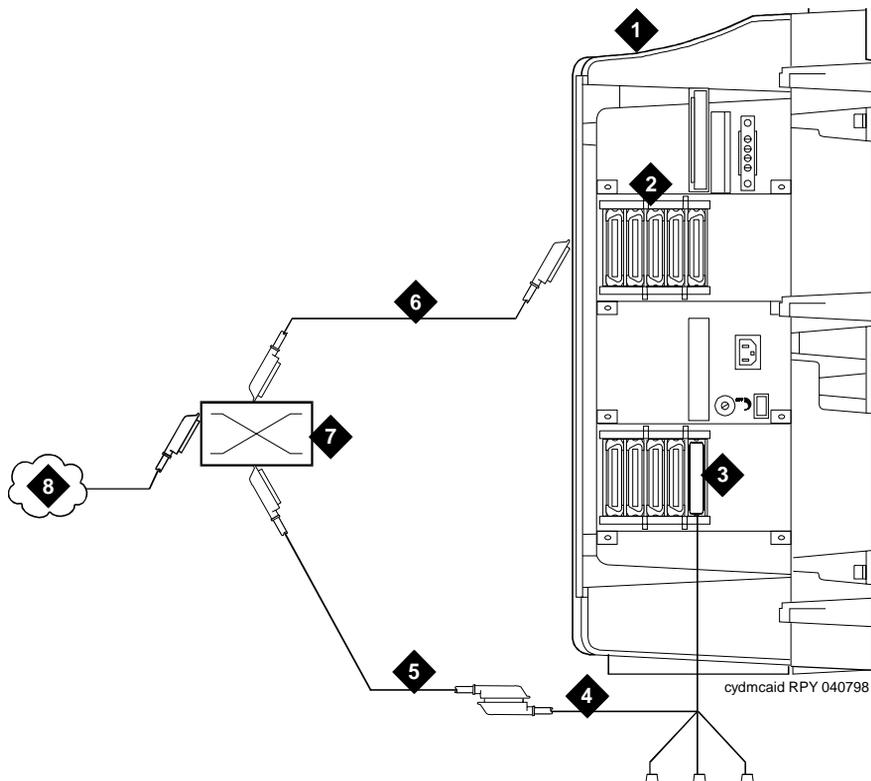
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cydmcaid RPY 040798

1. Release 7r PPN cabinet

2. AUX connector on processor carrier (use wire pair 50 and 25) (tip and ring)

3. Port carrier (with analog line circuit pack)

4. B25A 25-pair cable to AUX

5. Main distribution frame (MDF)

6. B25A 25-pair cable to the port carrier

7. Public switched telephone network (PSTN)

Figure 54.   Analog Loopback Connections R7si

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cydmtdml RPY 040798

1. Release 7r PPN cabinet

2. AUX connector on processor carrier (use wire pair 50 and 25, tip and ring)

3. Port carrier (with analog line circuit pack)

4. B25A 25-pair cable to AUX

5. Main distribution frame (MDF)

6. B25A 25-pair cable to the port carrier

7. Public switched telephone network (PSTN)

Figure 55.   Analog Loopback Connections R7si

Installing INADS Analog Loopback on a Standard-Reliability System

1. Connect the INADS tip and ring port from the AUX connector to an analog station port via the MDF. See Figure 53. Use wire pair 50 and 25.

2. If you are using power-fail transfer, connect the 808A2 transfer panel between the *INADS connection to the station* and the *INADS connection to the loop-start trunk*.

Installing INADS Analog Loopback on a High-Reliability System

Be sure to place the TN1748 SYSAM circuit packs in different cabinets or processor carriers. Also be sure to place the analog line circuit packs in the same cabinets or carriers as the TN1748 circuit packs.

1. Connect each INADS tip/ring port to an analog station port via the MDF. See Figure 53.

2. Connect each tip/ring port to a separate analog line circuit pack.

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Administering DEFINITY ECS for INADS

⟹ NOTE:
Add 2 pauses in front of the dial string when using cut-through trunks. Pauses are not required if using ARS.

1. Type **change system-parameters maintenance** and press Enter.

2. For high reliability systems, in the see interchange: field, type **daily** and press Enter. This is done in case 1 of the connections between the 2 TN1748 circuit packs is down. This assures that within 24 hours the working connection is available to report alarms.

3. Type **add station** <**number**> or <**next**> and press Enter.

4. In the Type: field, enter **500** (rotary analog telephone).

5. In the Port: field, enter the port number for this line.

6. For high reliability systems, repeat the above steps for the second analog line. Administer the 2 stations as part of a TEG (terminating extension group).

   a. Type **add term-ext-group** <**number**> or <**next**> and press Enter.

   b. In the Group Extension: field, enter the TEG extension number.

   c. In the Coverage Path: field, enter the coverage path number.

   d. Enter the Group Member Assignment station numbers. Press Enter when finished.

Partner Installation

The PARTNER system connects the DEFINITY ECS INADS port to an outgoing central office (CO) line and is programmed to seize the outside line when INADS seizes an inside PARTNER station line.

Listed below are the 2 types of PARTNER platforms:

- PARTNER Atlas platforms with United States firmware and a wide input power supply (WIPS) that allows a universal power supply. The Spain platform conforms to the United States/Atlas platform

- European platforms that focus on eastern Europe and the United Kingdom

The installation procedure describes the 2 types of PARTNER platforms with or without power fail transfer.

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INADS Connection (with Power Fail Transfer)

> ⚠ **CAUTION:**
> *Check local regulations regarding this connection method.*

In this configuration, the INADS line and the emergency telephone extension are bridged together. Figure 53 shows the US/Atlas platform. Figure 58 shows the European platform.
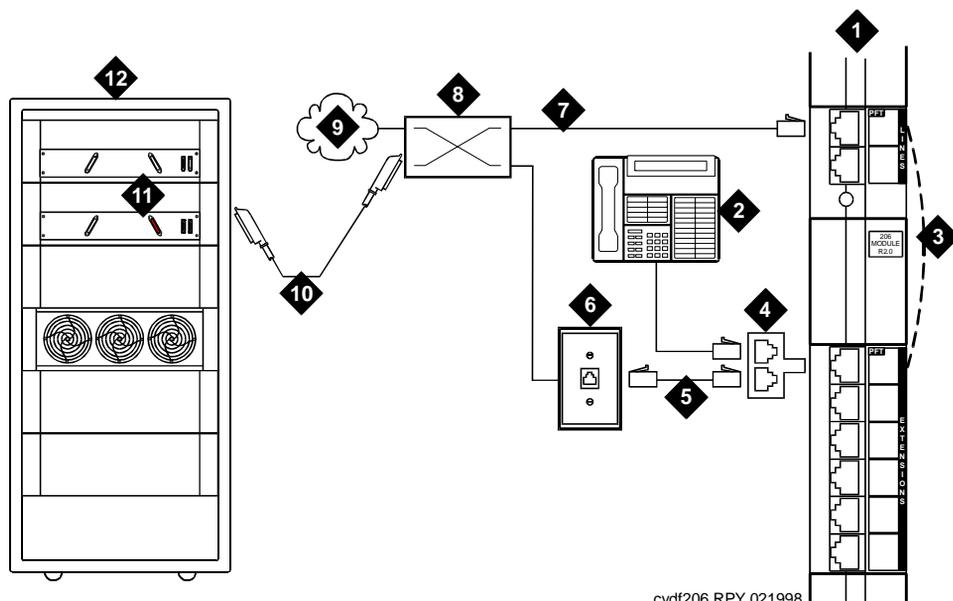
cvdf206 RPY 021998

1. PARTNER System

2. MLS12D telephone for programming

3. Internal connection during power failure, from CO line port 1 to station port 10

4. 258A adapter (bridged connection)

5. Standard RJ-45 telephone cord

6. 103A or modular wall jack

7. Dial tone from CO or DEFINITY extension

8. Main distribution frame

9. PSTN or DEFINITY extension

10. B25A 25-pair cable to AUX

11. AUX connector (use wire pair 50 and 25, tip and ring)

12. DEFINITY Release 7r PPN cabinet

Figure 56.   INADS Connection (US/Atlas Platform)

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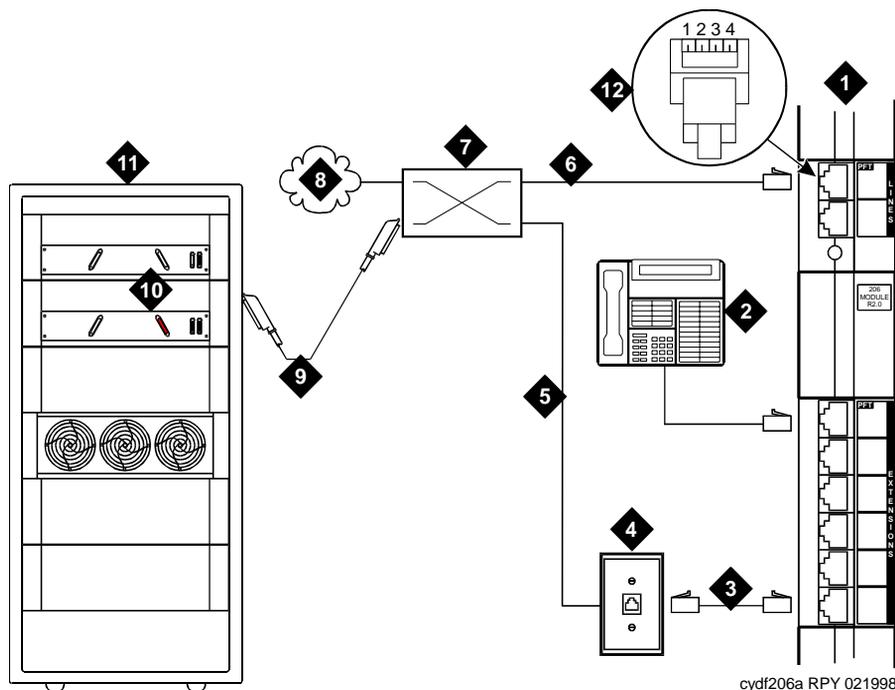
cydf206a RPY 021998

1. PARTNER System

2. MLS12D telephone for programming

3. Standard RJ-45 telephone cord

4. 103A or modular wall jack

5. Pins 2 and 3 on cable 5 bridge to pins 1 and 4 of cable 7 inside the main distribution frame

6. Dial tone from the CO or DEFINITY extension on pins 2 and 3; with return dial tone to the INADS port on pins 1 and 4 during power failure

7. Main distribution frame

8. PSTN or DEFINITY extension

9. B25A 25-pair cable to AUX

10. AUX connector (use wire pair 50 and 25, tip and ring)

11. DEFINITY Release 7r PPN cabinet

12. Standard RJ-45 connector (pins 2 and 3, tip and ring, connect to pins 1 and 4, tip and ring, when the internal contacts close during power failure)

Figure 57.   INADS Connection (European Platform)

Standard Reliability

■ **Normal connection**: Connect the INADS tip and ring port from the AUX connector (wire pair 50 and 25) to the tip/ring pair of CO line port 1 on the PARTNER system.

■ **US/Atlas/Spain platform connection**: Connect station 10 to the INADS port.

■ **European platform connection**: Bridge the outside pair of CO line port 1 to the INADS port. A 258A adapter may be used.

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High Reliability

Be sure that the TN1748 SYSAM circuit packs are located in different DEFINITY cabinets or processor carriers.

1. Bridge the 2 INADS tip/ring ports. A 258A adapter may be used.

2. Connect the bridged INADS tip/ring port to a PARTNER station port.

INADS Connection (without Power Fail Transfer)

⚠ CAUTION:

Check local regulations regarding this connection method.

In this configuration, the INADS line and the emergency telephone extension are bridged together. If this connection method is not allowed, do not connect the INADS port to station 10.

cydf206b RPY 021998

1. PARTNER System
2. MLS12D telephone for programming
3. Standard RJ-45 telephone cord
4. 103A or modular wall jack
5. Dial tone from the CO or a DEFINITY extension

6. Main distribution frame
7. PSTN
8. B25A 25-pair cable
9. AUX connector (use wire pair 50 and 25, tip and ring)
10. DEFINITY Release 7r PPN cabinet

Figure 58.   INADS Connection (all platforms)

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Standard Reliability

Normal connection:

1. Connect a system telephone to station 10 on the PARTNER system.

2. Connect a standard RJ-11 telephone line cord from the PARTNER CO line to the CO line protector.

3. Connect the INADS tip and ring port from the AUX connector to the tip/ring pair of CO line port 1 on the PARTNER via the MDF. See Figure 58. Use wire pair 50 and 25 on the MDF.

US/Atlas/Spain platform connection:

1. Select station 11-15 as the INADS port connection.

European platform connection:

1. Bridge the outside pair of CO line port 1 to the INADS port. A 258A adapter may be used.

High Reliability

Be sure that the TN1748 SYSAM circuit packs are located in different cabinets or processor carriers.

1. Bridge the 2 INADS tip/ring ports. A 258A adapter may be used. See Figure 58.

2. Connect the bridged INADS tip/ring port to a station port.

PARTNER Administration

Set Standard Telephone Station (European Platforms Only)

$\Longrightarrow$ NOTE:
Do not exit from the programming mode until instructed to do so.

1. Connect the PARTNER programming telephone (MLS12) to station 10.

2. Press Feature, followed by 0 0.

3. Press the left intercom (System Program) button twice.

4. Enter the password. The default password is **7777**. The green LED next to the left intercom button must be steady on.

5. Enter **# 3 0 8**.

6. Enter **1 0** (if station 10 is connected to the INADS port) or the station number connected to the INADS port.

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7. Enter **2** to set the station port to analog rotary. Enter **1** if an analog DTMF telephone or PARTNER system telephone is connected.

8. Enter **#** to return to the start of the programming mode.

Set PARTNER CO Line Port (All Platforms)

1. Enter **# 2 0 1**.

2. Press **1** for tone or **2** for pulse mode.

3. Enter **#** to return to the start of the programming mode.

Set Automatic Line Selection — Outgoing Trunk (All Platforms)

1. Press the right intercom (Central Tel Program) button.

2. Enter **1 5** (if INADS is connected to station 15) or enter the station number connected to the INADS port.

3. Enter *** ***.

4. Press the line 1 button (above left intercom). If the 2 lines are connected to the PARTNER for added reliability or security, press Next Procedure.

5. Enter *** ***.

6. Enter **#** to return to the start of the programming mode.

Set Incoming Line Ringing (All Platforms)

1. Press the right intercom (Central Tel Program) button.

2. Enter **1 5** (if INADS is connected to station 15) or enter the station number connected to the INADS port.

3. Press the line 1 button (above left intercom) until the LED changes to a steady green. This allows incoming calls to ring on line 1.

4. If AUDIX is installed, press the line 2 button until the LED changes to a steady green. This allows incoming calls to ring on line 2.

5. Enter **#** to return to the start of the programming mode.

6. Press Feature, followed by 0 0 to exit the programming mode.

DEFINITY ECS Administration

By default, the INADS port automatically seizes an outgoing trunk on the PARTNER system. Therefore, a "9" is not required in the switch dial string.

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Installation Test (All Installations)

These tests confirm that the hardware and administration are correct.

1. Place an outgoing call from the INADS port. Check for normal talk path.

2. Place an incoming call to the INADS port. Check for normal talk path.

3. Place an outgoing data from the INADS port to verify connection.

A failure in the link between the remote service center and the TN1748's INADS port can be detected automatically.

1. Type **change system-parameters maintenance** and press Enter.

2. Set the `Test Remote Access Port:` field to **y** and press Enter.

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19 Malicious Call Trace

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Malicious Call Trace

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The malicious call trace voice recorder connects directly to the tip and ring connections of a TN773/D auxiliary trunk circuit pack. See Figure 59. The 909A/B universal coupler provides seizure control to the recorder.

cydf038 PDH 091696

1. Malicious call trace voice recorder

2. 25-pair cable (T, R, S, S1, Sz, SZ1)
   to TN773/D auxiliary trunk circuit pack

3. 909A/B universal coupler

4. Power supply for universal coupler

5. To SZ1 on TN773 connector

6. Tip and ring wires

7. CBS1/C1 and CBS2/C2

Figure 59.   Malicious Call Trace

> **NOTE:**
> A wiring block must be locally engineered.

> **NOTE:**
> 909A couplers ships with one DW4B-DE cable and two DW8B-SE cables. The 909B ships with one KS-22911L2 power supply, one DW4B-DE cable, and two DW8B-SE cables.

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1. Determine the port assignment of the recorder from the malicious call tracing form.

2. Install the 909A/B universal coupler on a vertical surface.

3. Connect the SZ, SZ1, S, and S1 leads from the 909A/B to an auxiliary trunk circuit pack.

    a. Tip and ring connect from the voice recorder to the auxiliary trunk circuit pack (J1 on the 909A/B).

    b. CBS1/C1 and CBS2/C2 connect from the voice recorder to J2 on the 909A/B.

4. On the 909A/B universal coupler:

    a. Connect seizure control voltage of from -9 to -70 Volts to the PG2/BZ2 connection (pin 2 of J1). Switching voltage to the PG2/BZ2 connection can be from the 909A/B -48 VDC supply.

    b. Connect SZ1 to the ground lead of the DC power source used for PG2/BZ2.

    c. Set S1 to the "C2" position. Set S2 position 7 to "OPEN".

    d. Connect an approved -48 VDC power source to the **-48** and **GRD** terminals (pins 5 and 2, respectively, of J3 on the 909A/B).

5. Administer the switch for the call trace device.

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CONVERSANT® Voice-Response System

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CONVERSANT System

Figure 60 shows a typical CONVERSANT® system connected to a 3150 CSU. The MAP/40 installs inside a PC (see the MAP/40 Voice Processing Hardware Installation documentation). Locate the CONVERSANT System within 75 feet (22.87 m) of the CSU.
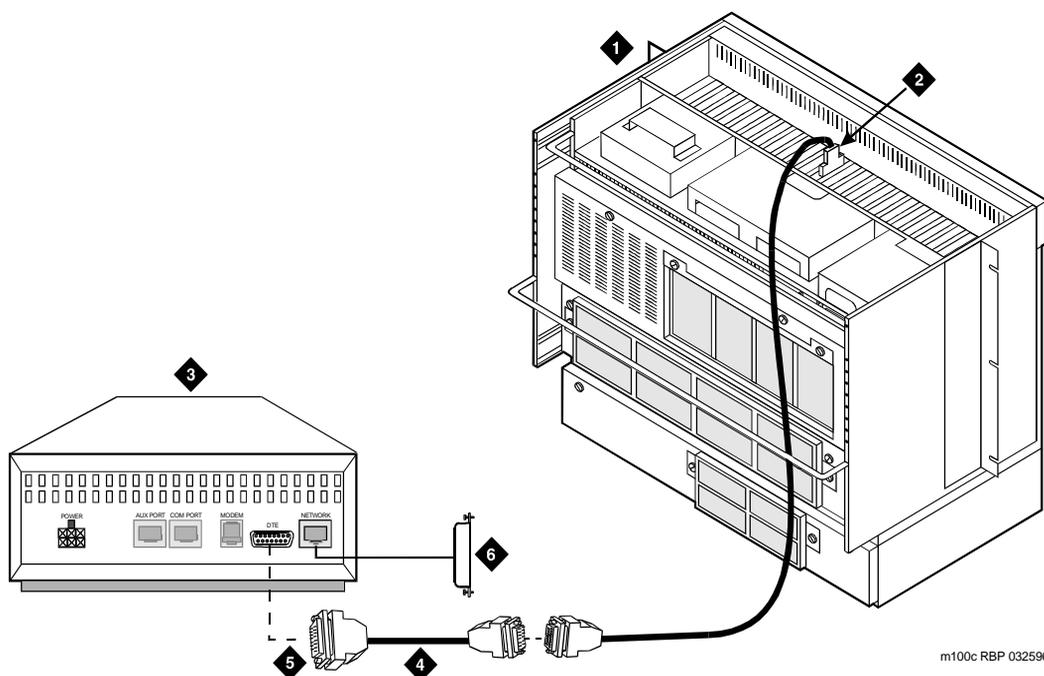
m100c RBP 032596

1. MAP/100C cabinet

2. T1 extension cable from T1 interface board (Slot 12)

3. 3150 channel service unit (CSU)

4. Adapter cable (Comcode 107073711)

5. To 15-Pin DTE connector on CSU

6, To DS1 circuit pack in DEFINITY System

Figure 60.   Typical Connections for CONVERSANT

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Loudspeaker Paging

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Loudspeaker Paging, Music-on-Hold, and External Alerting Equipment

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Loudspeaker Paging

The loudspeaker paging feature provides a connection from a TN773B/C/D auxiliary trunk circuit pack (or equivalent) to a customer-supplied paging amplifier. The music-on-hold feature provides a connection from a TN2183 analog line circuit pack (or equivalent) or auxiliary trunk circuit pack to a customer-supplied music source.

Loudspeaker Paging without Paging Adapter

Figure 61 shows the connections for the loudspeaker paging feature. These connections are used when the loudspeaker interface equipment is not located in the equipment room. If the equipment is located in the equipment room, the information outlet is not required. The connections shown are for one zone.

The figure also shows connections from the music source to the loudspeaker system through a paging amplifier as well as through a 909A/B coupler. A wiring block must be locally engineered.

NOTE:
If the loudspeaker paging system provides a talk-back microphone at the speakers, the microphone must be FCC approved (or equivalent) or a 909A/B universal coupler is required.

Refer to the tables at the end of this chapter for pinouts of the auxiliary trunk circuit pack.

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Loudspeaker Paging

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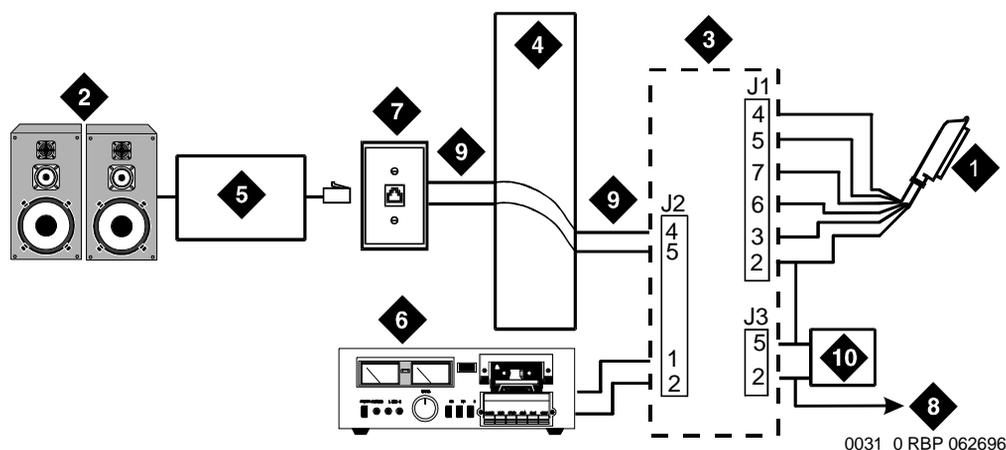
1. 25-pair cable to TN773B/C/D auxiliary trunk circuit pack (SZ1 connects to GRD on key 10)

2. Loudspeaker system

3. 909A/B universal coupler (if required)

4. Part of main distribution frame circuits 1-17

5. Paging amplifier

6. Music source for background music over loudspeakers

7. 103A or modular wall jack

8. To SZ1 on TN773 connector

9. Tip and ring wires

10. -48 VDC power supply for 909B

Figure 61.   Connections for Loudspeaker Paging

Loudspeaker Paging Access (Without Universal Coupler)

1. Determine port assignment of paging zone(s) from loudspeaker paging form.

2. At the main distribution frame, locate the connecting block and terminals assigned to the selected port.

3. On the locally engineered wiring block, place a strap between terminals S and SZ. Place a strap between terminals S1 and SZ1.

4. Install patch cord/jumper wires at the main distribution frame.

5. Connect a 2-pair line cord (modular plug at one end) from the information outlet to the paging amplifier (to the loudspeaker system).

6. Install loudspeaker equipment per the manufacturer's instructions.

7. Administer the switch for the new equipment.

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Loudspeaker Paging with Universal Coupler

An information outlet provides access to loudspeaker paging. The system side of the main distribution frame connects to a 909A/B universal coupler. Make provisions for the DC power that the 909A/B universal coupler requires, such as a 1151A, 1151A2, or other approved -48VDC power supply.

Six leads (T, R, SZ, SZ1, S, and S1) connect the adapter to an auxiliary trunk circuit pack located in a port carrier.

1. Determine port assignment of paging zone(s) from loudspeaker Paging form.

2. Identify carrier slot and label both ends of an A25D (male to male) cable.

3. Connect a cable from the 909A/B to the system side of the main distribution frame. A wiring block must be locally engineered.

4. Chapter 1, "909A/B Universal Coupler" provides details of the connections between the 909A/B universal coupler and the wiring blocks.

⚠ CAUTION:

Damage to the 909A/B may occur if the cable is plugged into J3 **before** *all cross-connects are completed.*

5. On the 909A/B universal coupler:

   ■ Connect seizure control voltage of from -9 to -70 volts to the PG2/BZ2 connection (pin 2 of J1). Switching voltage to the PG2/BZ2 connection can be from the 909's -48-volt supply.

   ■ Connect a -48 VDC power source to the -48 and GRD terminals on the 909A/B.

6. Install patch cord/jumper wires at the main distribution frame.

7. Connect a 2-pair line cord (modular plug at one end) from the information outlet to the loudspeaker system.

8. Install loudspeaker equipment per the manufacturer's instructions.

9. Connect an approved -48 VDC power source to the **-48** and **GRD** terminals (pins 5 and 2, respectively, of J3).

10. Administer the switch for the new equipment.

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  Music-on-Hold, Dial Dictation, or Recorded Announcement Access

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Music-on-Hold, Dial Dictation, or Recorded Announcement Access

Figure 62 shows the connections for music-on-hold, dial dictation, or recorded announcement features when the music source is Federal Communications Commission (FCC) registered (or equivalent). Figure 63 on page 183 shows the connections when the music source is not FCC-registered (or equivalent).

NOTE:

Use the following connection instructions when the music source is not located in the equipment room. If the music source is located in the equipment room, do not route the connections through the information outlet.

cydfmusc RPY 090397
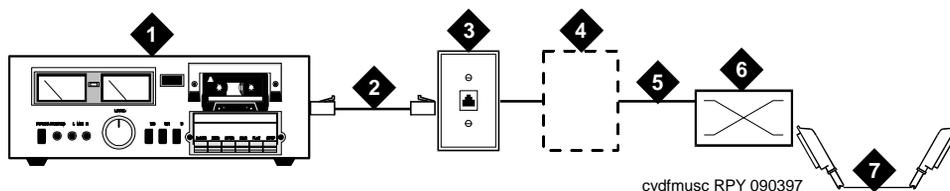
1. Music source
2. 4-pair modular cord
3. 103A or modular wall jack
4. 122A music adapter (if required) primarily France

5. Tip (green) and ring (red)
6. Part of main distribution frame
7. A25D 25 pair cable (male-to-male) to auxiliary trunk circuit pack

Figure 62.   Typical Registered Equipment Connections (Auxiliary Access)

1. If the music source is registered, the system side of the MDF connects directly to the system.

2. If the music source is not registered, the system side of the MDF connects to a 909A/B universal coupler.

Registered Music Source

Refer to Figure 62 to install a registered music source.

1. Determine feature port assignment from Feature-Related System Parameters Form.

2. Install music source per the manufacturer's instructions.

3. Install patch cord/jumper wires at the main distribution frame.

4. Administer the switch for the new equipment.

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Non-Registered Music Source

Refer to the figures below when installing a non-registered music source.

1. Determine feature port assignment from Feature-Related System Parameters Form.

2. Install the music source per the manufacturer's instructions.

3. Connect a cable from the assigned port carrier slot to J1 on the 909A/B. A wiring block must be locally engineered.

4. Connect the T-lead at pin 5 and the R-lead at pin 4 of J1 on the 909A/B universal coupler to the corresponding leads from the TN2183.

5. Connect the CT-lead at pin 5 and the CR-lead at pin 4 of J2 on the 909A/B to the MDF.

6. Install patch cord/jumper wires at the MDF to connect tip and ring to the information outlet at the music source.

7. Set the Protection/Paging switch to C1.

8. Connect a modular cord from the information outlet to the music source.

9. Connect -48V to pin 5 and -48V RET to pin 2 of J3 on the 909A/B. The power source may be an 1151A, 1151A2, or other approved power supply.

10. Administer the switch for the new equipment.
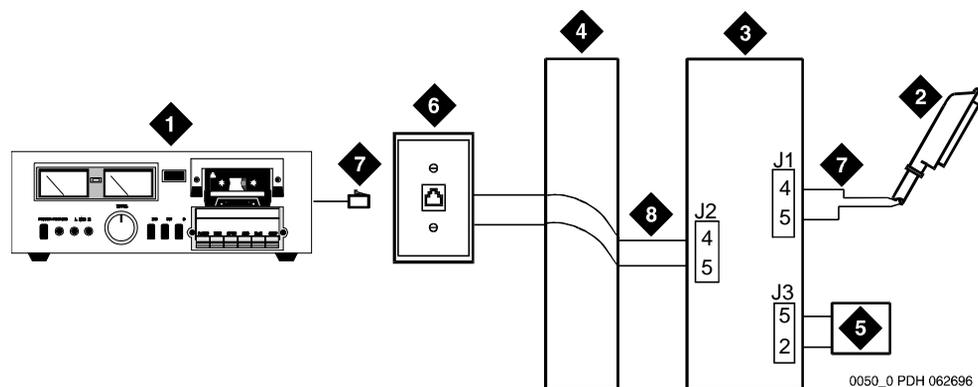
1. Customer-supplied music source
2. A25D 25-pair cable to auxiliary trunk circuit pack
3. 909A/B universal coupler
4. Part of main distribution frame
5. Power supply for universal coupler
6. 103A or modular wall jack
7. 4-pair modular cord
8. Tip and ring wires

Figure 63.   Typical Non-Registered Equipment Connections (Auxiliary Access)

➡ **NOTE:**
A wiring block must be locally engineered.
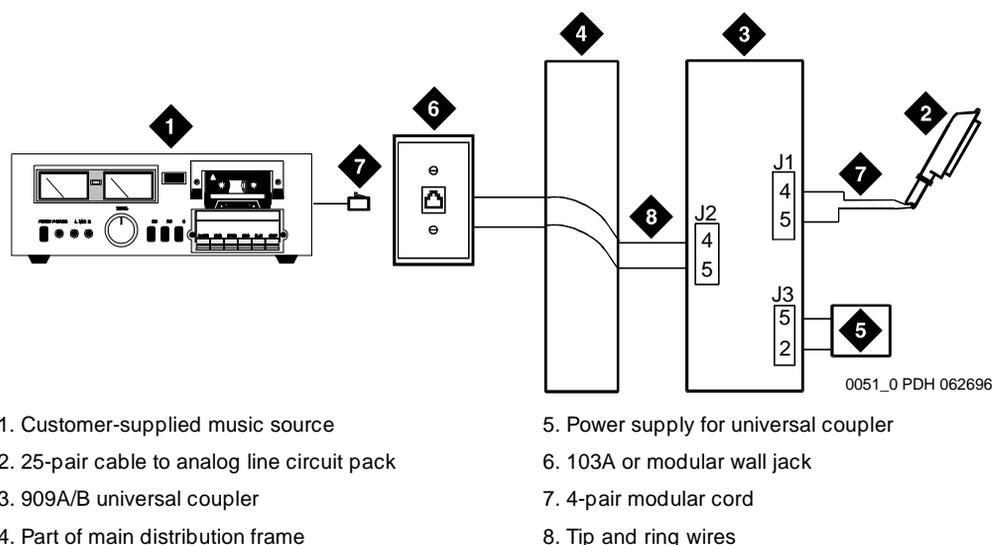
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21 Loudspeaker Paging, Music-on-Hold, and External Alerting Equipment
External Ringing

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1. Customer-supplied music source
2. 25-pair cable to analog line circuit pack
3. 909A/B universal coupler
4. Part of main distribution frame

5. Power supply for universal coupler
6. 103A or modular wall jack
7. 4-pair modular cord
8. Tip and ring wires

0051_0 PDH 062696

Figure 64.   Connections to Non-Registered Music-on-Hold via Analog Line

> **NOTE:**
> A wiring block must be locally engineered.

External Ringing

Connections for external ringing are at an information outlet. The system side of the main distribution frame (MDF) is connected to a TN2183 (or equivalent) analog line circuit pack.

> **NOTE:**
> Up to three devices can be connected to one analog line circuit pack port.

1. Wire the ringing device to the information outlet.

2. Administer the switch for the new equipment.

Queue Warning Indicator

The connections for the queue warning indicator are the same as external ringing. An AC indicator (light) such as a 21C49 can be used in a Uniform Call Distribution/Direct Departmental Calling (UCD/DDC) queue. The light is connected to an information outlet. The system side of the MDF is connected to an analog line circuit pack located in a port carrier.

1. Wire the queue warning indicator to the information outlet.

2. Administer the switch for the new equipment.

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PagePac Plus Paging System

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Paging and Announcement Equipment

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PagePac Plus Paging System

PagePac D20

The PagePac D20 is a 20-watt amplicenter and controller that can operate alone or with a zone expansion unit to provide multiple paging zones. It requires a 909A/B universal coupler if it operates alone, and a wiring block must be locally engineered.

cndfnzm LJK 082096

1. PagePac D20 amplicenter and controller

2. 25-pair cable to TN773 auxiliary trunk circuit pack (T, R, S, S1, SZ, SZ1)

3. Universal coupler

4. Part main distribution frame

5. Power supply for universal coupler

6. 103A or modular wall jack

7. 4-pair modular cord

8. To SZ1 on TN773 connector

9. Tip and ring wires

10. CBS1/C1 and CBS2/C2

Figure 65.   Connections for PagePac 20 Without Zone-Mate

shows a PagePac D20 amplicenter and controller with a zone expansion unit incorporated into the PagePac D20. The PagePac D20

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PagePac Plus Paging System

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amplicenter and controller does not require 909A/B when a zone expansion is
installed.
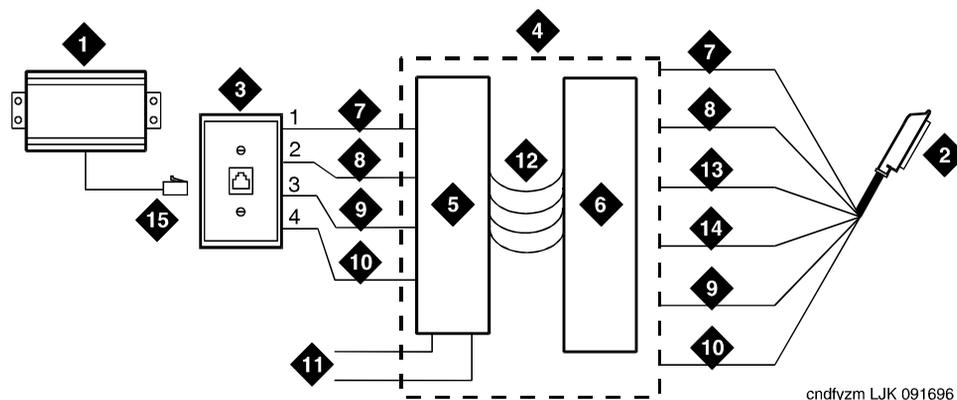
cndfyzm LJK 091696

1. PagePac D20 controller (with zone expansion unit)   6. System side   11. SZ and SZ1 not used on station side

2. B25A 25-pair cable to auxiliary trunk circuit pack   7. Tip (green)   12. 110P7A patch cord or jumpers

3. 103A or modular wall jack   8. Ring (red)   13. SZ

4. Part of main distribution frame   9. S   14. SZ1

5. Station side (yellow field)   10. S1   15. 4-pair modular cord

Figure 66.   Connections for PagePac 20 With Zone-Mate

PagePac 20/100/300

The 20/100/300 PagePac paging system can be wall-mounted. The unit provides
three output wattages: 20, 100 and 300. See Figure 67. If the PagePac 20/100/
300 amplicenter is used alone, it require a 909A/B universal coupler, and a wiring
block must be locally engineered.
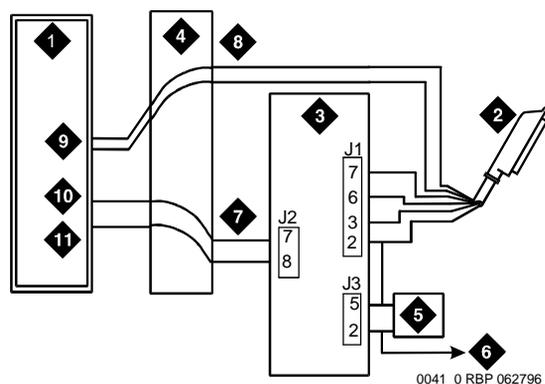
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ESPA Radio Paging

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1. PagePac 20/100/300 system
2. 25-pair cable to auxiliary trunk circuit pack (T, R, S, S1, Sz, SZ1)
3. 909A/B universal coupler
4. Part of main distribution frame
5. Power supply for universal coupler
6. To SZ1 on TN773 connector
7. CBS1/C1 and CBS2/C2
8. Tip and ring wires
9. Page in connections
10. Music/page connection
11. Signal ground connection

Figure 67.   Connections for PagePac 20/100/300 System

ESPA Radio Paging

Figure 68 shows typical connections to European Standard Paging Access (ESPA) equipment. Connect the LINE jack on the PassageWay interface to a digital line 4-wire DCP circuit pack via the MDF.
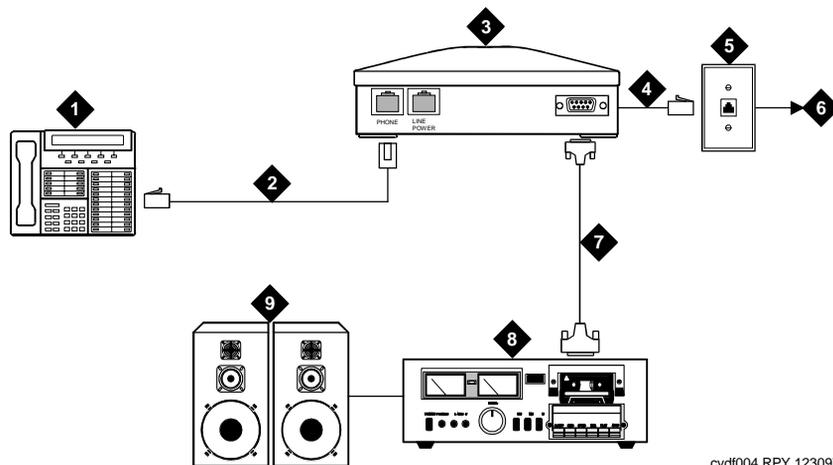
1. DCP telephone
2. 4-pair modular cord
3. PassageWay interface
4. 4-pair modular cord
5. 103A or modular wall jack
6. To digital line circuit pack
7. RS-232 connector
8. ESPA radio paging equipment
9. Paging loudspeakers

Figure 68.   Typical ESPA Radio Paging Connections

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ESPA Radio Paging 188

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23 AUDIX Interface Options

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AUDIX Interface Options

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The audio information exchange (AUDIX) sometimes connects to the system through the processor interface circuit pack. The first circuit on the processor interface can connect directly to the AUDIX through the PI connector on the rear of the control carrier (all except Release 7 CMC).

Release 7 CMC does not use the control link (CL) mode.

Connect any of the remaining 3 circuits on the processor interface that supports AUDIX through a 7400D data module that serves as the interface link for AUDIX. Table 32 shows the option settings.

Table 32.   Data Module Settings for DEFINITY AUDIX

DIP Switch 1	Setting
9600	ON
DIP switch 2	Setting
SYNC	ON
INT	ON
AANS	ON
All other switches	OFF

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23 AUDIX Interface Options

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Multimedia Application Server Interface for MMCX 191

Multimedia Communications Products: MMCX, MMCH, ESM

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Multimedia Application Server Interface for MMCX

The multimedia application server interface (MASI) enables the DEFINITY ECS to provide calling features to the MultiMedia Communications eXchange (MMCX). The MMCX server connects to the DEFINITY ECS through a D8W cable. See Table 33 for pin assignments and Figure 69 for pin locations.

Table 33.   D8W cable Modular Pin Assignments

Pin	Signal	Pin	Signal
1	Receive ring	5	Transmit Tip
2	Receive tip	7	No connection
3	No connection	7	No connection
4	Transmit ring	8	No connection
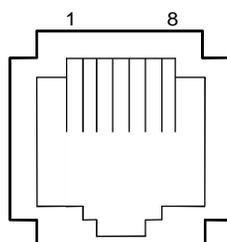
plmxmod PDH 051397

Figure 69.   Modular Jack Pin Assignment

You can connect the MMCX server to the DEFINITY ECS by either of two methods: directly or via the main distribution frame.

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Multimedia Application Server Interface for MMCX

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Direction Connection

The figure below illustrates the direct method, which connects a DEFINITY ECS DS1 interface circuit pack to a customer-supplied digital line PC board in the MMCX, via a D8W cable.

cydfmcx1 LJK 060297
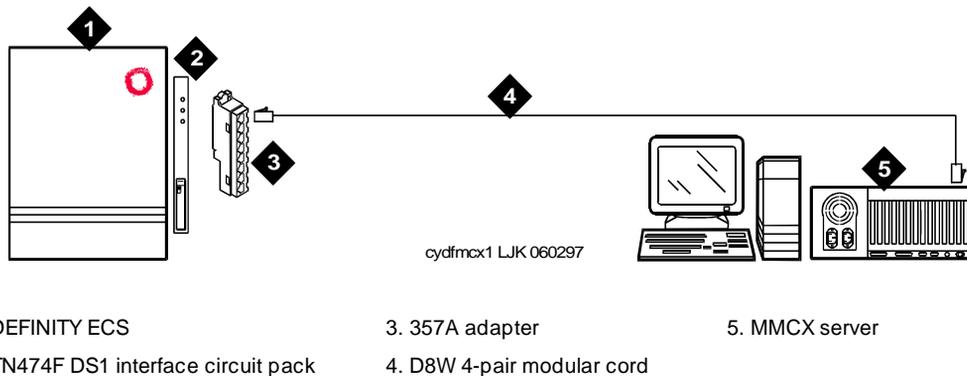
1. DEFINITY ECS   3. 357A adapter   5. MMCX server

2. TN474F DS1 interface circuit pack   4. D8W 4-pair modular cord

Figure 70.   MMCX Connected Directly to DEFINITY ECS

Main Distribution Frame Connection

Figure 71 illustrates the main distribution frame method which connects a DEFINITY ECS DS1 interface circuit pack, with a 25-pair cable to the MDF, to the customer-supplied digital line PC board in the MMCX, via through a D8W cable.

cydfmcx2 LJK 060297
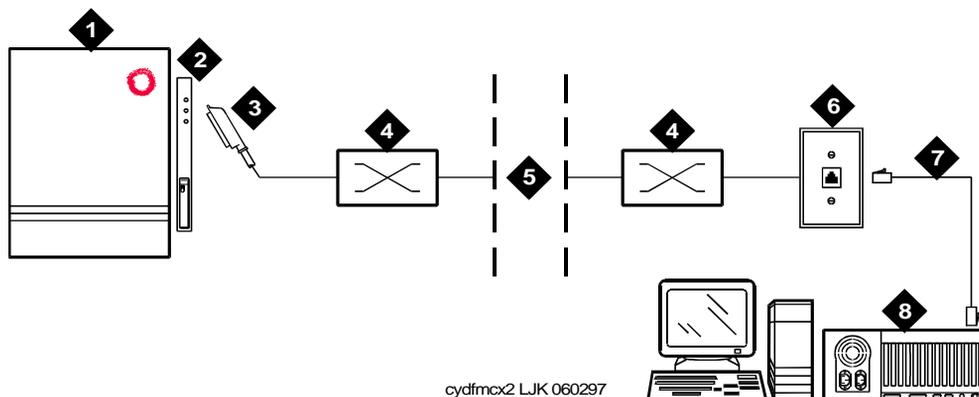
1. DEFINITY ECS   4. Main distribution frame   7. D8W 4-pair modular cord

2. DS1 interface circuit pack   5. Public telephone network   8. MMCX server

3. 25-pair cable   6. 103A or modular wall jack

Figure 71.   MMCX Connected to DEFINITY ECS via the MDF

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Wideband Endpoints
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Wideband Endpoints

Wideband endpoints include video equipment or bridges/routers for LANs. Use the running list that accompanies the system to make cable connections.

Non-Signaling Configuration

A non-signaling connection to a wideband endpoint may connect to a channel service unit (CSU). If *not* using a CSU, the distance between the system and the endpoint is limited to a few hundred feet. See Figure 72. The maximum distance depends on the type of cable and type of endpoint.

cydf049 RPY 123097

1. Wideband endpoint (wire per manufacturer)
2. Modular cord
3. 103A or modular wall jack
4. Channel service unit (CSU)
5. H700-307 cable to DTE connector on CSU

6. DS1/E1 circuit pack
7. Main distribution frame (MDF)
8. Distance limit depends on cable and endpoint type.
9. A25D 25-pair cable (male-to-male)

Figure 72.   Typical Non-Signaling Wideband Configuration

If using a CSU, the distance between connections may be up to 1300 feet (397.2 m). The maximum distance to the endpoint depends on the type of cable and the specifications of the endpoint.

Signaling Configuration

A signaling connection from the system to a wideband endpoint passes through a bandwidth controller. The distance between the system and the bandwidth controller depends on the type of cable and controller. Figure 73 shows connections with and without a CSU.

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Wideband Endpoints
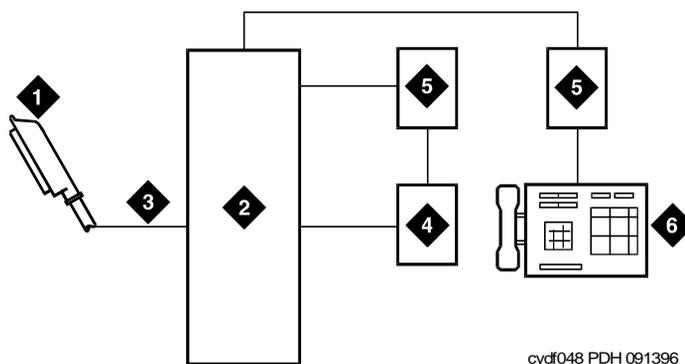
194
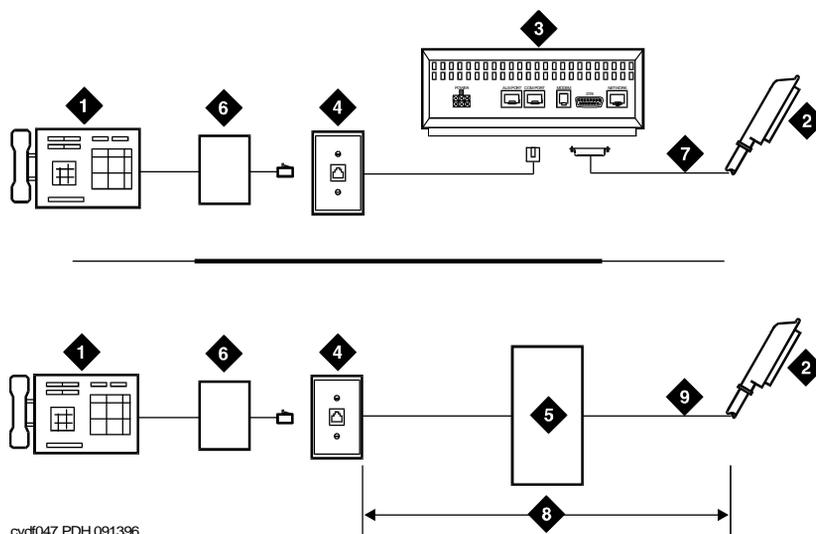
cydf047 PDH 091396

1. Wideband endpoint (wire per manufacturer)	6. Bandwidth controller
2. To DS1/E1 circuit pack	7. H700-307 cable to DTE connector on CSU
3. Optional channel service unit (CSU)	8. Distance limit depends on cable type and bandwidth controller type
4. 103A or modular wall jack	
5. Part of main distribution frame (MDF)	9. A25D 25-pair cable (male-to-male)

Figure 73.   Typical Signaling Wideband Configuration

The bandwidth controller connects directly to the wideband endpoint. The controller typically installs near the endpoint where they directly connect (usually within a few feet of each other).
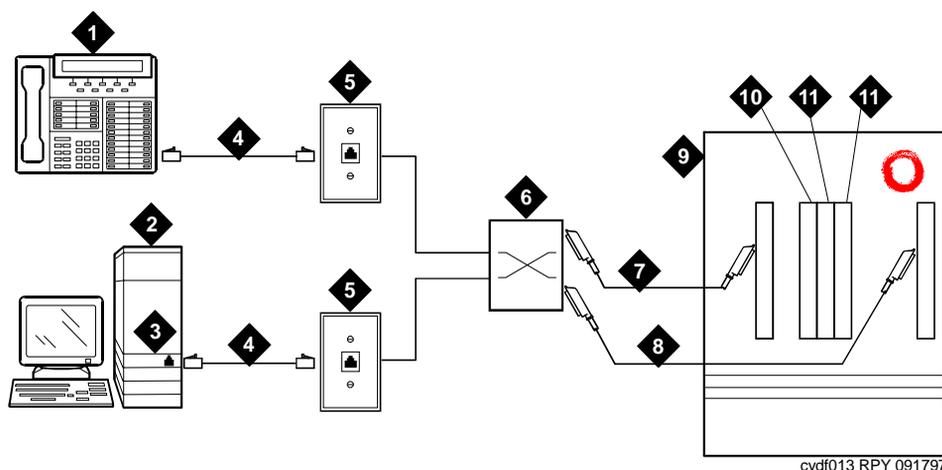
■ For non-CSU installations, cross the transmit and receive lines so a transmit signal from the DS1/E1 circuit pack connects to the receive connection on the bandwidth controller and a transmit signal from the bandwidth controller connects to the receive connection on the DS1/E1 circuit pack.

■ For CSU installations, cross the transmit and receive lines between the CSU and the bandwidth controller.

Figure 74 shows a remote port module. In this configuration, there can be considerable distance between the bandwidth controller and the wideband endpoint. The maximum distance between elements depends on the quality of the cables and on the specifications of the wideband equipment.

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Multimedia Call Handling (MMCH)

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cydf048 PDH 091396

1. To TN474F DS1/E1 circuit pack	4. Bandwidth controller
2. Part of main distribution frame (MDF)	5. Remote port module
3. H700-307 cable	6. Wideband endpoint (wire per manufacturer)

Figure 74.   Typical Signaling Wideband Configuration with Remote Port Module

1. For non-CSU installations, cross the transmit and receive lines so a transmit signal from the TN474F connects to the receive connection on the bandwidth controller and a transmit signal from the bandwidth controller connects to the receive connection on the TN474F.

2. For CSU installations, cross the transmit and receive lines between the CSU and the bandwidth controller.

Multimedia Call Handling (MMCH)

MMCH provides a single point to point conference call using voice, video, and data from one endpoint to another. The customer must have endpoints and a personal computer with H.320 desktop video installed.

Connect the Endpoints

Use the following procedure and to connect the endpoints:

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1. DCP telephone, 2 or 4 wire to match circuit pack type
2. Personal computer
3. BRI adapter
4. D8W cord
5. 103A or modular wall jack
6. Main distribution frame (MDF)
7. 25-pair cable to digital line circuit pack
8. 25-pair cable to BRI circuit pack or NT1, 4-to-2 wire adapter
9. DEFINITY ECS
10. Multimedia-interface circuit pack
11. Voice conditioner circuit pack

Figure 75. Typical Multimedia Call Handling Connections

1. Each PC MMCH endpoint must contain a BRI adapter.

2. Connect a DCP telephone to a digital line circuit pack. The DCP telephone must be used in conjunction with the PC. Refer to the tables at the end of this chapter for the pinout of the digital line circuit pack.

3. Connect the PC BRI adapter to any BRI port on the DEFINITY System. Refer to the tables at the end of this chapter for the pinout of an ISDN BRI circuit pack.

Administer the System

1. For and R7si, enter **change system-parameters maintenance**. Change the `Packet Bus Activated?` field to **y** and press Enter. Not required for R7r.

2. Call INADS and notify the representative that the `Multimedia Call Handling (MMCH)?` field on page 2 of the customer-options form must be changed to **y**.

3. Logoff the terminal and then log back on the terminal to see your changes

Administer the Endpoints

1. Log in and enter **add data-next** <or a valid extension number>.

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2. The data module form appears. On page 1 of the form, enter the `Data Extension`: **xxxx,** `Type`: **7500**, the `Name`: user's name (such as ProShare), and enter **y** in `Multimedia?` field.

3. On page 2 of the form, enter **n** in the `XID?` field, and enter **n** in the `MIM Support?` field and press Enter.

Administer "One Number Complex"

1. Identify the voice telephone (DCP set) to associate with the data endpoint. The station record for this voice station must be changed.

2. Enter **change station** <**station number**>. The station form appears.

3. On page 1 of the form, enter the data extension number in the `MM Complex Data Ext:` field.

4. On page 2 of the form, enter **y** in the `H.320 Conversion?` field and press Enter.

5. Enter **y** in the `Multimedia Early Answer field`.

Setup and Test the MMCH Installation

This section provides general setup and testing procedures for the PictureTel, ProShare, Vistium, and Zydacron multimedia endpoints. Use the documentation that accompanies the endpoint equipment for more details.

Configuring the PictureTel PCS50 (Live 50) and PCS100

Table 34.   Minimum System Requirements

Version:	Live 50 version 1.7 or higher
Minimum Processor Speed:	487/33 MHz, DX2/77
Disk Space:	20 MB
Memory:	8 MB RAM, 17 MB recommended
ISA Expansion Slots (17-bit):	2 slots
Monitor:	VGA, SVGA
Operating System:	Windows™ 3.1x or Windows™ 95

These endpoints do not need any special configuration settings. The standard PictureTel configuration for a DEFINITY ECS is as follows.

1. Load the LiveShare Plus software first.

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2. Enter the user name and company name. Use default values for subsequent prompts.

3. Enter a site name.

4. Select Restart Windows and FINISH.

5. Load the Live 50 VAFC drivers.

6. Load the Picture Tel Live 50 software.

7. Open the *PictureTel Live* program group from the Windows™ Program Manager screen.

8. Double click on the **PictureTel Live Configure** icon.

9. At the **Welcome** screen, click on **continue**.

10. Go to the **registration confirmation** screen and click on **continue**.

11. Enter the **Network Interface Settings**. Be sure that "ISDN" has an "x" in the box. Click on **continue**.

12. At the **ISDN Parameters** screen, set the signaling protocol to **USA Canada: 5ESS Custom Point-to-Point**. Click on **continue**.

13. At the **Hardware Settings** screen, set the following: Interrupt (IRQ) to 11, Base I/O Port=280, and Base Memory=D000. Under the Video Input section, select the NTSC circle. Click on **continue**.

14. At the Audio Device screen, enter the necessary information.

15. At the **Node Name** screen, enter a name for the PC using the application software package.

16. At the **Modify config.sys** screen, click the **SAVE** button.

17. The remainder of the software loads automatically.

18. When the load is finished, reboot the PC.

19. Open the *PictureTel Live* program group from the Windows™ Program Manager screen.

20. Double click on the **PictureTel Live** icon. The program takes about 1 minute to open.

How to Place a PictureTel Video Call

1. Turn on the video camera. Be sure the green LED is on.

   $\Longrightarrow$ **NOTE:**
   A problem may be encountered when trying to open the PictureTel application software. If the application seems to freeze during initialization (no response for several minutes) then there may be a conflict with the interrupt (IRQ) port setting. Check the PictureTel configuration to make sure that the IRQ port is set to 11. If initialization is still a problem, contact a PictureTel representative.

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2. Open the PictureTel application program.

3. Two windows should appear: one local video and one remote video.

4. Go to the remote video window (the one without the local video image inside it).

5. Click on the **blue phone** icon at the top left of the window.

6. A **DIAL PAD** window opens. Use the keyboard, or mouse and dial pad, to enter the *DATA* extension of another multimedia endpoint. If you are dialing another PictureTel, you can place a 1B (one 74 Kb channel) call by only filling in the first telephone extension box on the **DIAL PAD** window. To make a 2B (two 74 Kb channels) call, you must put the same called party extension in the second telephone extension box on the **DIAL PAD** window.

7. To initiate a call, click on the **VIDEO CALL** button on the top right of the **DIAL PAD** window.

8. The dial pad disappears and you see a status window that shows "ringing."

9. When the connection is made, the status window disappears and you can see the connection status on the bottom bar of the remote video window.

Troubleshooting the PictureTel

Symptom: A conference call between a PictureTel and a ProShare has problems with the video connection or with video switching.

Solution: Be sure the PictureTel is version 1.7 or higher and the ProShare is version 2.0 or higher.

ProShare Configuration

Table 35.   Minimum System Requirements

Version:	2.0 or higher
Minimum Processor Speed:	487/33 MHz, DX2/77
Disk Space:	7 MB
Memory:	12 MB RAM, 17 MB recommended
ISA Expansion Slots (17-bit):	2 slots
Monitor:	740x480, 257-color, VGA, SVGA
Operating System:	Windows™ 3.1x or Windows™ 95

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The ProShare system must be set up so that it does not look for a Service Profile Identifier (SPID) when connecting to the DEFINITY ECS. This is important because you administer the ProShare as a single 7500 data set and the telephone extension associated with that data set applies to both BRI channels.

1. Load the ProShare software onto the PC using the default values.

2. Enter the company name and serial number of the software.

3. Select the default directory location and install all files.

4. Answer NO to modem Setup.

5. Scroll through the list of countries and select the country in which the PC is installed.

6. At the **Protocol and Switch Mfg** window, click on **Custom**. Click on **AT&T** and click on **Accept**.

7. At the next window, choose **PBX** for Exchange Switch, and choose **G3r** (for Release 7r) or **G3i** (for Release 7si) (as appropriate) as the PBX type. Click on **Accept**.

8. Select yes or no for Phone Call Support.

9. A window with **#Phone Numbers** and **#SPIDS** appears. Set **#Phone Numbers** to **1** and set **#SPIDS** to **0**.

10. Click on the **Aliases** button and enter the last 5 digits of the data extension number and an external alias.

11. Leave the telephone number at default and click on **Accept**.

12. Select **restart windows**.

How to Place a ProShare Video Call

1. Boot the ProShare computer.

2. Open the camera lens. Be sure the green LED is on.

3. Open **ProShare Personal Conferencing** program group from the Windows™ Program Manager screen.

4. Double click on the **ProShare Conferencing** icon.

5. If this is a first time install, click on OK for the camera test. This test can take several minutes to complete.

6. After the tutorial runs (if desired) and the product is registered, the ProShare application opens with 2 video windows.

7. Click on the Call button. A telephone dial pad appears. Use the dial pad to enter the telephone number of the desired extension to place a test call *to*. The ProShare only makes 2B calls. The telephone number entered is used to place both calls. To place a 2B (two 74 Kb channels) call to 2 different telephone extensions, separate them with a colon "**:**". To place a 57 Kb call instead of a 74 Kb call, enter a pound "**#**" sign to the end of the called party extension.

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8. To initiate the call, click on the **DIAL** button on the handset window. The dialing status displays where the extension was entered. When the connection is made, remote video appears.

Troubleshooting the ProShare

Symptom: Any attempt to place a data call to the complex's voice station is denied by the ProShare.

Solution: When configuring the ProShare, you entered the voice extension of the complex. You need to enter the data extension (Step G, below). To do this:

a. Go to the ProShare directory and run the Diagnostics and Utilities program.

b. Double click on the **Hardware and ISDN Configuration** utility.

c. Choose **ISDN Line Configuration**.

d. Set **Protocol = custom** and **Manufacturer = AT&T (5ESS)**. Click on the **Accept** button.

e. Set **Switch = PBX**, **PBX Type = G3r** (or Release 7r) or **G3i** (or Release 7si). Click on the **Accept** button.

f. Set **Phone Call Support = No** and click on the **Accept** button.

g. Set **#Phone Numbers = 1**, **#SPIDs = 0**, and **Phone Number** to the data endpoint extension. Click on the **Accept** button.

Symptom: Cannot accept a multimedia telephone call from off-premises to the single number.

Solution: Under "Aliasing," enter the data extension number. To do this:

a. Go to the ProShare directory and run the Diagnostics and Utilities program.

b. Double click on the **Hardware and ISDN Configuration** utility.

c. Choose **ISDN Line Configuration**.

d. Set **Protocol = custom** and **Manufacturer = AT&T (5ESS)**. Click on the **Accept** button.

e. Set **Switch = PBX**, **PBX Type = G3r** (for Release 7r) or **G3i** (for Release 7si). Click on the **Accept** button.

f. Set **Phone Call Support = No** and click on the **Accept** button.

g. Set **#Phone Numbers = 1**, **#SPIDs = 0**, and **Phone Number** to the data endpoint extension.

h. Click on the **Aliasing** button.

i. In the **Alias** box, enter the data extension number, choose **External**, click the **Add** button, click the **OK** button, and click the **Accept** button.

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Symptom: Get a short break in audio path during first few seconds of a call. This is most noticeable when covering to AUDIX/Voice mail.

Solution: ProShare mutes the audio path when it does a "capabilities exchange" in H.320. This problem is being addressed in later versions of the ProShare software. Contact your Lucent Technologies representative for more information.

Vistium Configuration

Table 36. Minimum System Requirements

Version:	1.03.10 or higher
Minimum Processor Speed:	487/33 MHz, DX2/77
Disk Space:	10 MB
Memory:	8 MB RAM, 17 MB recommended
ISA Expansion Slots (17-bit):	1 slot
Monitor:	VGA, SVGA
Operating System:	Windows™ 3.1x or Windows™ 95

Zydacron Configuration

Table 37. Minimum System Requirements

Version:	Z250 v. 1.0 or ZydApp2 v. 1.3
Minimum Processor Speed:	487/33 MHz, DX2/77
Disk Space:	5 MB
Memory:	4 MB RAM, 8 MB recommended
ISA Expansion Slots (17-bit):	1 slot
Monitor:	VGA, SVGA
Operating System:	Windows™ 3.1x or Windows™ 95

These endpoints do not need any special configuration settings. The standard configuration for a DEFINITY ECS is as follows. Use the documentation that accompanies the Zydacron equipment for more details.

1. Open Windows and load the software application.

2. Select Full Installation.

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3. Click on OK for the default location of the application directory (c:\ZYDAPP2).

4. Select Yes to reset the video drivers (if desired).

5. View or close the READZA2.txt file as desired.

6. When the Collaboration Software dialog box opens, select Yes if another vendor's video conferencing application is being loaded. Select No if only Zydacron software is being loaded.

7. The software continues to load automatically. When finished, the application icons appear in the program group.

How to Place a Zydacron Video Call

1. Turn on the video camera. Be sure the green LED is on.

2. Double click on the **Zydacron** icon to start the program. The program may take about 30 seconds to open.

3. Two local video windows should appear.

4. Click the Dial icon from the Main toolbar.

5. Use the keypad or the computer keyboard to enter the telephone number of the test endpoint or telephone.

6. To initiate the call, click on the **CALL** button. The Incoming Call screen appears on the test endpoint (or the test telephone rings).

7. Select ANSWER on the test endpoint or pick up the test telephone handset.

8. Remote video appears on the local screen and a talk path is opened on the headset. For a test telephone, a talk path is opened.

Troubleshooting the Zydacron

Symptom: After each PC reboot, the first time you bring up the Zydacron application and receive a telephone call, if you do not answer the data call, the answer screen stays frozen in the window.

Solution: Restart the Zydacron application. Press the Ctrl, Alt, and Del keys at the same time. This brings up a window that allows you to select a task. Select the **Zydacron** application and click on the **end task** button.

Symptom: Cannot make an outgoing call. Get a Message Interrupt.

Solution: The interrupt (IRQ) setting is incorrect. Contact your Zydacron representative for the recommended IRQ settings.

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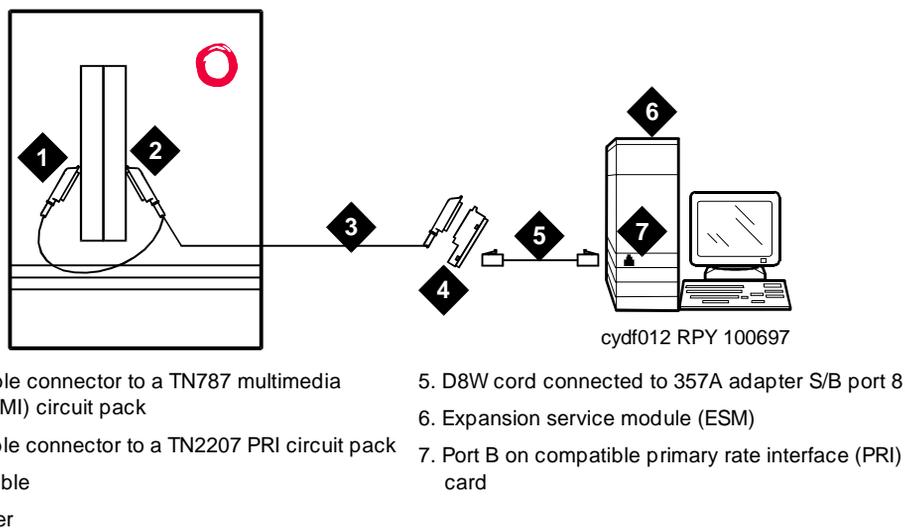
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Place Conversion Test Call

> **NOTE:**
> The `H.320 Conversion?:` field must be set to **y** on page 2 of the Station
> Form.

Place a conversion test call to an endpoint with a known video capability (for
example: call your voice station from your PC).

Expansion Services Module

The Expansion Services Module (ESM) provides T.120 data sharing capability on
a MMCH multipoint H.320 video conference. Each person in the conference must
have endpoints and a personal computer with the H.320 video application
installed. The DEFINITY ECS must have the expansion service module installed.

cydf012 RPY 100697

1. Port B Y-cable connector to a TN787 multimedia
   interface (MMI) circuit pack

2. Port A Y-cable connector to a TN2207 PRI circuit pack

3. 25-pair Y-cable

4. 357A adapter

5. D8W cord connected to 357A adapter S/B port 8

6. Expansion service module (ESM)

7. Port B on compatible primary rate interface (PRI)
   card

Figure 76.   Typical Multimedia Call handling ESM Connections

ESM Installation

Use the following procedure and Figure 76 to connect to the ESM equipment:

1. Install the TN2207 primary rate interface (PRI) circuit pack and the TN787
   multimedia interface (MMI) circuit pack in the DEFINITY System port
   carrier.

2. Record the circuit pack locations.

3. Connect the ESM Y-cable as shown.

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Administer the System

From the system administration terminal:

1. Enter **list configuration all,** and a list of the installed carriers, circuit packs, and ports appears.

2. Record the location (board number) of the new circuit packs and verify that all other required circuit packs (refer to "ESM Installation") are present.

3. Enter **add DS1 xxxxx,** (where xxxxx is the location of the TN2207 PRI circuit pack recorded in step 2), and the DS1 circuit pack administration form appears.

4. Set the `Name:` field to **ESM DS1**

5. Set the `Bit Rate:` field to **2.048**

6. Set the `Line Coding:` field to **hdb3**

7. Set the `Signaling Mode:` field to **isdn-pri**

8. Set the `Connect:` field to **pbx**

9. Set the `Interface:` field to **network**

10. Set the `Country Protocol:` field to **1**

11. Set the `Protocol Version:` field to **a**

12. Set the `CRC?:` field to **y**

13. The Idle Code default is 11111111.

14. The DCP/Analog Bearer Capability default is 3.1 kHz.

15. Set the `MMI Cabling Board:` field to **xxxxx** (where xxxxx is the location of the TN787 MMI circuit pack recorded in step 2). This must be the slot for port B of the Y-cable.

16. `The MMI Interface:` field **ESM** appears.

17. Enter **add signaling-group next** and the signaling-group form appears.

18. Change `Associated Signaling:` field to **y** .

19. Change `Primary D-Channel Port:` field to **xxxx17** (where xxxx is the address of the TN2207 PRI circuit pack, for example: 1B0517).

20. The `Max Number of NCA TSC:` default is `0` .

21. The `Max Number of GA TSC:` default is `0` .

22. `Trunk Group for NCA TSC:` ____ (leave blank)

23. `Trunk Group for Channel Selection:` ____ (leave blank)

24. Logoff the terminal and then log back on the terminal to view your changes.

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Place Test Call

Place multimedia data-conference call to an endpoint with known video
capability to test the esm function.

Troubleshooting

To determine ESM link status enter the following commands from the system
administration terminal:

1. **Status esm**

2. **Status signaling-group**

3. **List MMI**

➡ **NOTE:**
When you move ESM circuit packs, you MUST remove the DS1 and
signaling group translations. You cannot use the **change circuit pack**
command.

Refer to for further
information.

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25 Property Management System
Connecting the Property Management System   207

Property Management System

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Connecting the Property Management System

A data module and an asynchronous data unit form the interface between the G3V4 and the property management system (PMS). See Figure 77 and Chapter 4, "Data Modules and Asynchronous Data Units", for connection and configuration information.
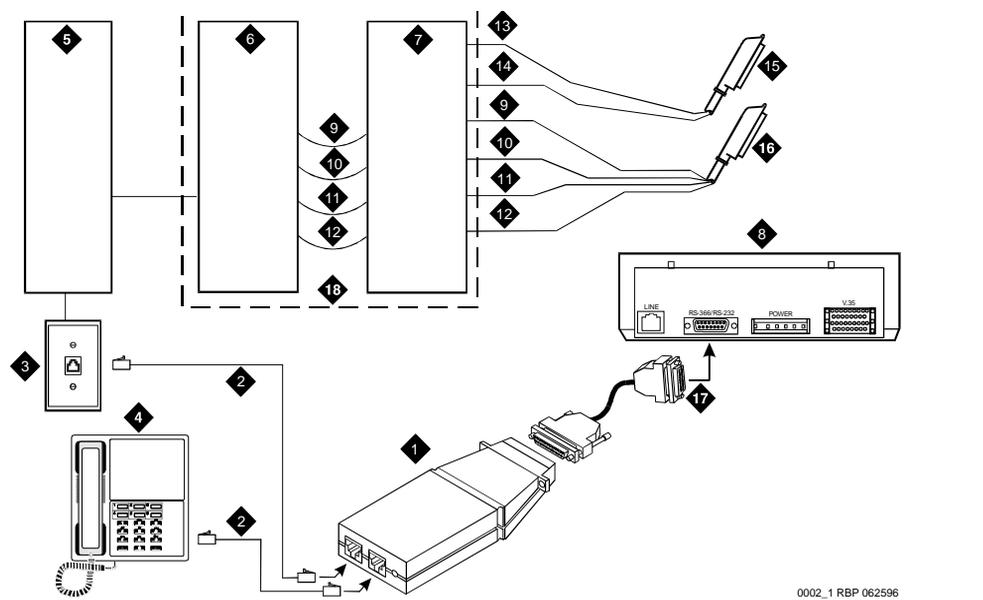
1. Z3A1 or Z3A2 ADU	6. Station side blue or white field	10. TXR	15. To TN747 analog line circuit pack
2. 4-pair line cord	7. System side	11. PXT	16. To TN727B data line circuit pack
3. 103A or modular wall jack	8. Data module	12. PXR	17. 25-pin RS-232-D connector (male)
4. Analog telephone	9. TXT	13. Tip	18. Main distribution frame (MDF)
5. Satellite site or adapter location		14. Ring	

Figure 77.   Connections to Asynchronous Data Unit

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25 Property Management System
Connecting a Terminal and/or Journal Printer

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Connecting a Terminal and/or Journal Printer

You can connect customer data terminals, host computers, and/or an optional journal printer in either of two ways.

Using Data Modules

1. Configure printer or terminal in accordance with the recommendations in the vendor's documentation.

2. Configure the data module for the printer or terminal, using the instructions in Chapter 4, "Data Modules and Asynchronous Data Units".

3. Identify the port associated with the data unit or data module using the Data Module Form (see "Administering the DEFINITY ECS for Data Modules" on page 70).

4. Establish a physical connection from the data port on the circuit pack, through the MDF, to the wall jack where the data unit is installed.
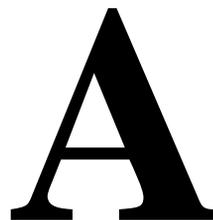
5. Connect the data modules to the equipment.

Using an Asynchronous Data Unit (ADU) and a Data Line Circuit Pack

You connect an asynchronous data terminal through an ADU to a data line circuit pack. Normally, the connected data terminal powers the data unit. The data unit can also be remotely or locally powered using a 2012D transformer with a 248B adapter. Data units connected to receive-only printers require external power.

1. Configure printer or terminal in accordance with the recommendations in the vendor's documentation.

2. Identify the port associated with the data unit or data module using the Data Module Form (see "Administering the DEFINITY ECS for Data Modules" on page 70).

3. Establish a physical connection from the data port on the circuit pack, through the MDF, to the wall jack where the data unit is installed.

4. Connect the information outlet to the ADU.

5. Connect the RS-232 plug on the ADU or data module to the data terminal.

6. Connect the printer to the ADU via a modem or data module, using the instructions in Chapter 4, "Data Modules and Asynchronous Data Units", and Chapter 5, "External Modems".

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A   Connector and Cable Pinout Charts

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Connector and Cable Pinout Charts

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Table 38.   Lead and Color Designations

Cross-Connect Pin	Color	Amphenol Pin	Backplane Pin
1	W-BL	27	102
2	BL-W	01	002
3	W-O	27	103
4	O-W	02	003
5	W-G	28	104
7	G-W	03	004
7	W-BR	29	105
8	BR-W	04	005
9	W-SL	30	107
10	SL-W	05	007
11	R-BL	31	107
12	BL-R	07	007
13	R-O	32	108
14	O-R	07	008
15	R-G	33	109
17	G-R	08	009
17	R-BR	34	110
18	BR-R	09	010
19	R-SL	35	111
20	SL-R	10	011

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Table 38.   Lead and Color Designations

Cross-Connect Pin	Color	Amphenol Pin	Backplane Pin
21	BK-BL	37	112
22	BL-BK	11	012
23	BK-O	37	113
24	O-BK	12	013
25	BK-G	38	302
27	G-BK	13	202
27	BK-BR	39	303
28	BR-BK	14	203
29	BK-SL	40	304
30	SL-BK	15	204
31	Y-BL	41	305
32	BL-Y	17	205
33	Y-O	42	307
34	O-Y	17	207
35	Y-G	43	307
37	G-Y	18	207
37	Y-BR	44	308
38	BR-Y	19	208
39	Y-SL	45	309
40	SL-Y	20	209
41	V-BL	47	310
42	BL-V	21	210
43	V-O	47	311
44	O-V	22	211
45	V-G	48	312
47	G-V	23	212
47	V-BR	49	313

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Table 38.   Lead and Color Designations

Cross-Connect Pin	Color	Amphenol Pin	Backplane Pin
48	BR-V	24	213
49	V-SL	50	300
50	SL-V	25	200

Table 39.   Cross-connect pinouts

Cross-Connect	TN742B TN747B	TN754T N727	TN760B TN760C	TN772/B	TN773 TN773B TN773C	TN735	TN777B TN474E	TN747/B TN2183	TN2224
1	T.1		T.1	T.1	T.1	T.1	C_5V	T.1	T.1
2	R.1		R.1	R.1	R.1	R.1		R.1	R.1
3		TXT.1	T1.1	TXT.1	SZ.1	BT.1	C_ENAB	T.2	T.2
4		TXR.1	R1.1	TXR.1	SZ1.1	BR.1		R.2	R.2
5		PXT.1	E.1	PXT.1	S.1	LT.1	C_SYNC*	T.3	T.3
7		PXR.1	M.1	PXR.1	S1.1	LR.1		R.3	R.3
7	T.2		T.2	T.2	T.2	T.2	C2D-DATA	T.4	T.4
8	R.2		R.2	R.2	R.2	R.2	RDATA*	R.4	R.4
9		TXT.2	T1.2	TXT.2	SZ.2	BT.2	TDATA*		T.5
10		TXR.2	R1.2	TXR.2	SZ1.2	BR.2	TRSYNC*		R.5
11		PXT.2	E.2	PXT.2	S.2	LT.2	GRD		T.7
12		PXR.2	M.2	PXR.2	S1.2	LR.2	SCLK*		R.7
13	T.3		T.3	T.3	T.3	T.3			T.7

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A Connector and Cable Pinout Charts

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Table 39.   Cross-connect pinouts

Cross-Connect	TN742B TN747B	TN754T N727	TN760B TN760C	TN772/B	TN773 TN773B TN773C	TN735	TN777B TN474E	TN747/B TN2183	TN2224
14	R.3		R.3	R.3	R.3	R.3			R.7
15		TXT.3	T1.3	TXT.3	SZ.3	BT.3			T.8
17		TXR.3	R1.3	TXR.3	SZ1.3	BR.3	PAHER*		R.8
17		PXT.3	E.3	PXT.3	S.3	LT.3		T.5	T.9
18		PXR.3	M.3	PXR.3	S1.3	LR.3	C_48V	R.5	R.9
19	T.4		T.4	T.4	T.4	T.4		T.7	T.10
20	R.4		R.4	R.4	R.4	R.4		R.7	R.10
21		TXT.4	T1.4	TXT.4	SZ.4	BT.4	C_P2S CLK	T.7	T.11
22		TXR.4	R1.4	TXR.4	SZ1.4	BR.4	LI (RX)	R.7	R.11
23		PXT.4	E.4	PXT.4	S.4	LT.4	LO* (TX)	T.8	T.12
24		PXR.4	M.4	PX4.4	S1.4	LR.4	LBACK 1	R.8	R.12
25	T.5		T.5	T.5	T.5	T.5	GND	T.9	T.13
27	R.5		R.5	R.5	R.5	R.5	C_5V	R.9	R.13
27		TXT.5	T1.5	TXT.5	SZ.5	BT.5		T.10	T.14
28		TXR.5	R1.5	TXR.5	SZ1.5	BR.5		R.10	R.14
29		PXT.5	E.5	PXT.5	S.5	LT.5		T.11	T.15
30		PXR.5	M.5	PXR.5	S1.5	LR.5	C_RST	R.11	R.15
31	T.7		T.7	T.7	T.7	T.7		T.12	T.17
32	R.7		R.7	R.7	R.7	R.7		R.12	R.17

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Table 39.   Cross-connect pinouts

Cross-Connect	TN742B TN747B	TN754 TN727	TN760B TN760C	TN772/B	TN773 TN773B TN773C	TN735	TN777B TN474E	TN747/B TN2183	TN2224
33		TXT.7	T1.7	TXT.7	SZ.7	BT.7	RDATA		T.17
34		TXR.7	R1.7	TXR.7	SZ1.7	BR.7	TDATA		R.17
35		PXT.7	E.7	PXT.7	S.7	LT.7	TRSYNC		T.18
37		PXR.7	M.7	PXR.7	S1.7	LR.7	GRD		R.18
37	T.7		T.7	T.7	T.7	T.7	SCLK		T.19
38	R.7		R.7	R.7	R.7	R.7			R.19
39		TXT.7	T1.7	TXT.7	SZ.7	BT.7			T.20
40		TXR.7	R1.7	TXR.7	SZ1.7	BR.7			R.20
41		PXT.7	E.7	PXT.7	S.7	LT.7	GRD	T.13	T.21
42		PXR.7	M.7	PXR.7	S1.7	LR.7		R.13	R.21
43	T.8		T.8	T.8	T.8	T.8	C_PRES*	T.14	T.22
44	R.8		R.8	R.8	R.8	R.8		R.14	R.22
45		TXT.8	T1.8	TXT.8	SZ.8	BT.8		T.15	T.23
47		TXR.8	R1.8	TXR.8	SZ1.8	BR.8	DC2_DATA	R.15	R.23
47		PXT.8	E.8	PXT.8	S.8	LT.8	LI* (RX)	T.17	T.24
48		PXR.8	M.8	PXR.8	S1.8	LR.8	LO (TX)	R.17	R.24
49	GRD	GRD	GRD	GRD	GRD	GRD	LBACK2	GRD	GRD
50	GRD	GRD	GRD	GRD	GRD	GRD	GND	GRD	GRD

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Table 40. DS1 Interface cable H600-348

50-Pin			15-Pin		
Pin	**Color**	**Designation**	**Pin**	**Color**	**Designation**
			Plug 04		
38	W-BL	LI (High)	11	W-BL	LI (High)
13	BL-W	LI	03	BL-W	LI
39	W-O	LO	09	W-O	LO
14	O-W	LO (High)	01	O-W	LO (High)
			Plug 03		
41	W-G	LI (High)	11	W-G	LI (High)
17	G-W	LI	03	G-W	LI
42	W-BR	LO	09	W-BR	LO
17	BR-W	LO (High)	01	BR-W	LO (High)
			Plug 02		
44	W-SL	LI (High)	11	W-SL	LI (High)
19	SL-W	LI	03	SL-W	LI
45	R-BL	LO	09	R-BL	LO
20	BL-R	LO (High)	01	BL-R	LO (High)
			Plug 01		
47	R-O	LI (High)	11	R-O	LI (High)
22	O-R	LI	03	O-R	LI
48	R-G	LO	09	R-G	LO
23	G-R	LO (High)	01	G-R	LO (High)

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Table 41.   DS1 Interface Cable H600-307

50-Pin			15-Pin		
Pin	**Color**	**Designation**	**Pin**	**Color**	**Designation**
02	W-BL				
03	BL-W				
47	W-G	LI (High)	11	W-G	LI (High)
22	G-W	LI	03	G-W	LI
48	W-BR	LO	09	W-BR	LO
23	BR-W	LO (High)	01	BR	LO (High)
49	W-SL	LOOP2	07	W-SL	LOOP2
24	SL-W	LOOP1	05	SL-W	LOOP1

All other pins empty.

Table 42.   TN2185 ISDNBRI — 4-Wire S Interface Pinout

Port	Signal	Cross-Connect Pin	Color	Amphenol Pin	Backplane Pin
1	TXT.1	1	W-BL	27	102
	TXR.1	2	BL-W	01	002
	PXT.1	3	W-O	27	103
	PXR.1	4	O-W	02	003
2	TXT.2	5	W-G	28	104
	TXR.2	7	G-W	03	004
	PXT.2	7	W-BR	29	105
	PXR.2	8	BR-W	04	005
3	TXT.3	9	W-SL	30	107
	TXR.3	10	SL-W	05	007
	PXT.3	11	R-BL	31	107
	PXR.3	12	BL-R	07	007
4	TXT.4	13	R-O	32	108

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Table 42.   TN2185 ISDNBRI — 4-Wire S Interface Pinout

Port	Signal	Cross-Connect Pin	Color	Amphenol Pin	Backplane Pin
	TXR.4	14	O-R	07	008
	PXT.4	15	R-G	33	109
	PXR.4	17	G-R	08	009
5	TXT.5	17	R-BR	34	110
	TXR.5	18	BR-R	09	010
	PXT.5	19	R-SL	35	111
	PXR.5	20	SL-R	10	011
7	TXT.7	21	BK-BL	37	112
	TXR.7	22	BL-BK	11	012
	PXT.7	23	BK-O	37	113
	PXR.7	24	O-BK	12	013
7	TXT.7	25	BK-G	38	302
	TXR.7	27	G-BK	13	202
	PXT.7	27	BK-BR	39	303
	PXR.7	28	BR-BK	14	203
8	TXT.8	29	BK-SL	40	304
	TXR.8	30	SL-BK	15	204
	PXT.8	31	Y-BL	41	305
	PXR.8	32	BL-Y	17	205

Table 43.   DCP Extender 25-Pair Cable Pinout

Cross-Connect Pin	Wire Color	Amphenol Pin	Backplane Pin
1	W-BL	27	102
2	BL-W	01	002
3	W-O	27	103

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Table 43.   DCP Extender 25-Pair Cable Pinout

Cross-Connect Pin	Wire Color	Amphenol Pin	Backplane Pin
4	O-W	02	003
5	W-G	28	104
7	G-W	03	004
7	W-BR	29	105
8	BR-W	04	005
9	W-SL	30	107
10	SL-W	05	007
11	R-BL	31	107
12	BL-R	07	007
13	R-O	32	108
14	O-R	07	008
15	R-G	33	109
17	G-R	08	009
17	R-BR	34	110
18	BR-R	09	010
19	R-SL	35	111
20	SL-R	10	011
21	BK-BL	37	112
22	BL-BK	11	012
23	BK-O	37	113
24	O-BK	12	013
25	BK-G	38	302
27	G-BK	13	202
27	BK-BR	39	303
28	BR-BK	14	203
29	BK-SL	40	304
30	SL-BK	15	204
31	Y-BL	41	305
32	BL-Y	17	205

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Table 43.   DCP Extender 25-Pair Cable Pinout

Cross-Connect Pin	Wire Color	Amphenol Pin	Backplane Pin
33	Y-O	42	307
34	O-Y	17	207
35	Y-G	43	307
37	G-Y	18	207
37	Y-BR	44	308
38	BR-Y	19	208
39	Y-SL	45	309
40	SL-Y	20	209
41	V-BL	47	310
42	BL-V	21	210
43	V-O	47	311
44	O-V	22	211
45	V-G	48	312
47	G-V	23	212
47	V-BR	49	313
48	BR-V	24	213
49	V-SL	50	300
50	SL-V	25	200

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