Chapter 2
Installing the 3512

Contents

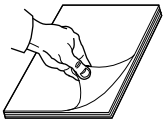
Overview

All 3512s

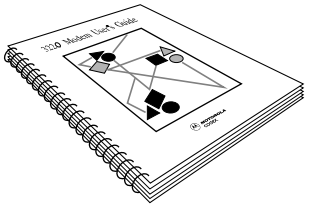
This chapter explains how to install the standalone version of the Motorola 3512 and 3512 SDC, and how to ensure that the device is operational.

If you need more than one 3512, Motorola offers a Mini-Nest that holds multiple device card modules. This chapter explains how to remove a 3512 card from its standalone enclosure; refer to the *Mini-Nest User's Guide* (Part No. 09384, B) for nest installation instructions.

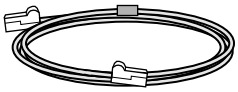
Unpacking



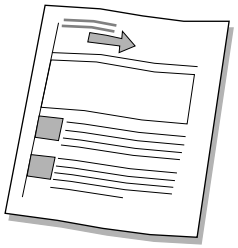
The 3512 is wrapped in reusable shock-absorbent packing material. Save the carton and packing material for later shipping or storing. **NOTE:** Refer to Chapter 10, Specifications and Ordering, for a complete list of features available.



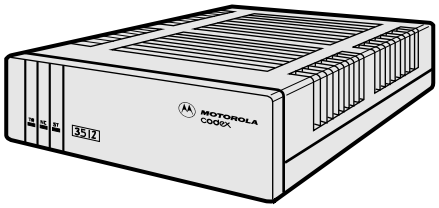
One *3512 DSU/CSU User's Manual*



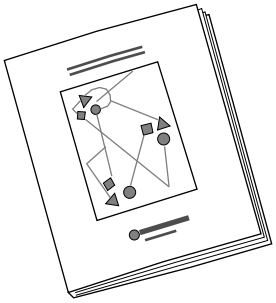
One Restoral Adaptor Cable
(with SLR or SW 56 Feature)



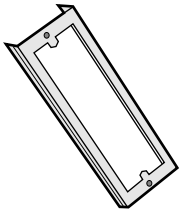
One 3512 and 3512 SDC
DSU/CSU FastInfo Card



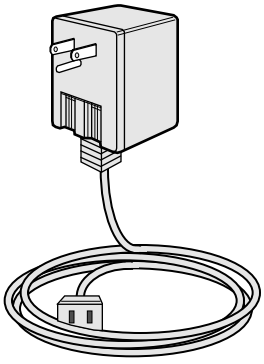
One 3512 or 3512 SDC DSU/CSU
(standalone unit)



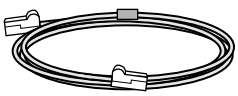
One *3512 DSU/CSU Quick Start Guide*



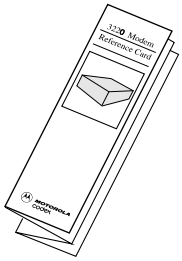
One Mini-Nest
Conversion Back Panel
(Optional)



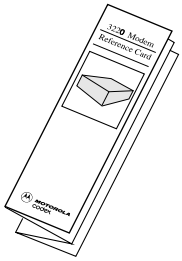
One Wall-Mount Transformer
with Power Cord



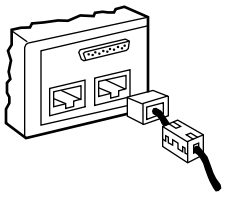
One 15-Foot DDS Cable



One 3512 DSU/CSU
Reference Card



One 3512 SDC DSU/CSU
Reference Card



Caution

This illustration shows ferrite beads or cylinders, which ensure that your unit will operate in compliance with FCC RFI requirements, *attached* to the DDS and SLR line cable. If your unit includes beads *separate* from these cables, you must **attach the beads to the cables before installing the unit**. Refer to the instructions packaged with the beads.

If the equipment is damaged, contact the shipper. If you have further concerns about damaged or missing parts, contact your nearest Motorola representative, or:

In the United States:

Motorola
Customer Administration
20 Cabot Boulevard
Mansfield, MA 02048-1193
(508) 261-4000, Extension 4745

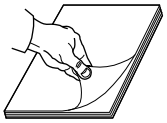
Outside the United States:

The nearest Motorola distributor. Refer to the Motorola Information Systems Group Customer Information page, in the section For Sales-Related Issues.

Telephone Equipment

To transmit digital data, the 3512 uses digital data services available from inter- and local-exchange carriers, meeting the requirements of AT&T Publication 62310 and related Bellcore specifications.

To transmit data over a restoral transmission path, the 3512 provides the single-line restoral (SLR) feature, at V.32/V.32bis dial-modem data rates, or the switched-56 single-line restoral (SW 56) feature, at 56 kbps.



For more information on...	*Refer to...*
Ordering cables	Chapter 10, Specifications and Ordering
Cable pin assignments	Appendix A

Customer-Provided Telephone Equipment

FCC regulations and telephone company procedures prohibit connection of customer-provided equipment to telephone company-provided coin service (central office-implemented systems). Connection to party lines is subject to state tariffs.

The service provider may change its equipment, operation, or procedures. If changes affect your equipment or service, the telephone company will provide written notice so you can make the necessary changes to maintain uninterrupted service.

Contact your service provider if you have questions about your telephone line. The provider may ask you for information about equipment connected to the line. Within the United States, you should provide your equipment's FCC registration number (refer to the following sections).

Telephone Company Procedures and Regulatory Requirements

To comply with FCC and service provider (telco) procedures and requirements, you must order telephone lines appropriate for your data rates, number of devices, and network connections. Refer to Appendix A for details on digital interfaces, jack connectors, REN service codes, and other identifying information.

If Problems Arise

If your telephone equipment is not operating correctly, immediately remove it from the telephone line before it harms your network. If the service provider notes the problem, they will notify you in advance, if possible, and may temporarily disconnect your service. When you are notified, you will be given the chance to correct the problem and be informed of your right to file a complaint with the FCC.

If your 3512 DSU/CSU needs repairs, they should be performed by Motorola or an authorized representative of Motorola. For information, contact the Motorola Customer Support Center.

Selecting a Site

All 3512s

The 3512 DSU/CSU must be installed in a clean location, free from shock and vibration. Make sure the site meets the physical requirements described in Chapter 10, Specifications and Ordering.

The unit must be within 6 feet (1.83m) of a grounded AC outlet that meets the necessary power requirements. Allow at least 36 inches (91.44 cm) in front of the unit for front panel access, at least 4 inches (10.16 cm) in back for cable clearance, and at least 1 inch (2.54 cm) on each side for air circulation.

Caution

To avoid overheating the unit's circuitry, never place anything within an inch of the ventilation slots.

Installing the Standalone 3512 or 3512 SDC

All 3512s

Before making any connections, make sure that the power requirements on the 3512's bottom label match your power source. Unplug the 3512 power cord.

Connect your 3512 to the following, in this order (refer to Figure 2-1):

1) Primary line
2) Restoral line (optional; integral *or* external)
3) Data terminal equipment (DTEs) or host computer
4) Network management system (optional)
5) Power source

Figure 2-1 shows how cables attach to a 4-port 3512. (The 2-port 3512 and 3-port 3512 SDC are similar.) The following sections describe these connections in detail.

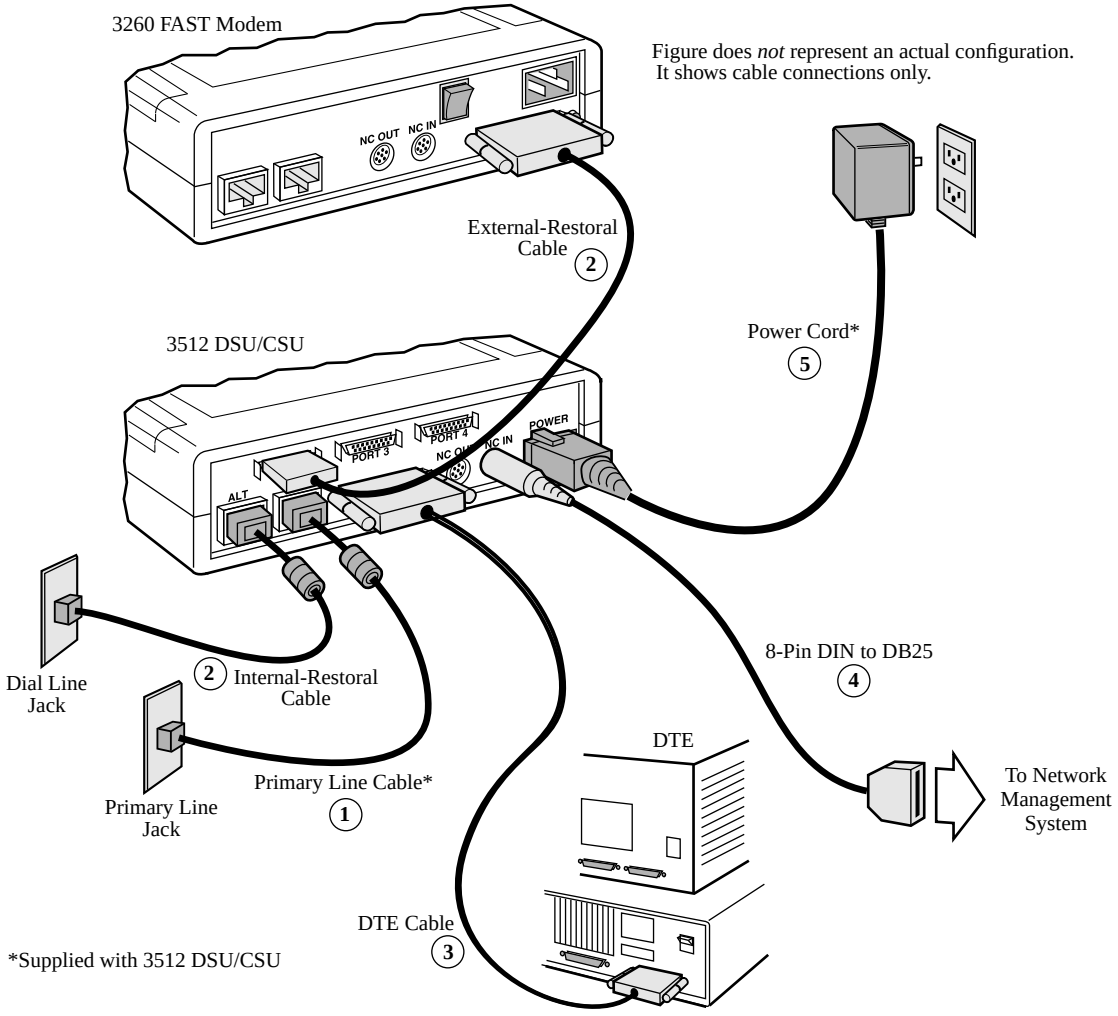
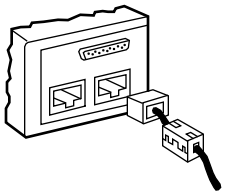


Figure 2-1. 3512 Cabling Overview, Four-Port 3512

Connection to Telephone Line

Motorola supplies an 8-pin modular jack cable with the 3512. **NOTE:** If your service terminates in a 6-pin modular jack or 4-wire spade lug, you can order cables from Motorola . (Refer to Chapter 10, Specifications and Ordering.)



Caution

Install cables with the ferrite end adjacent to the 3512.
The ferrite bead or cylinder ensures that your unit will operate in compliance with FCC RFI requirements.

Connect the cable to the 3512's DDS jack and the DDS line jack (Figure 2-2).

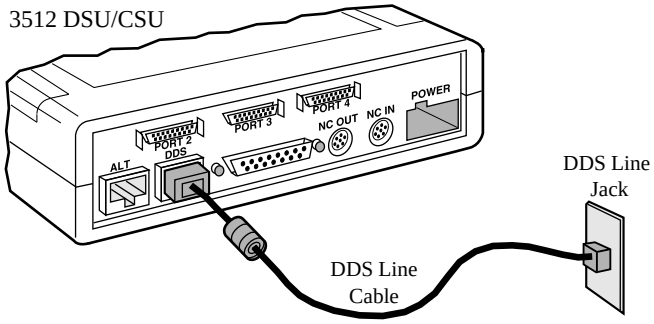


Figure 2-2. 3512 Connection to DDS (Primary) Line

Restoral

You can configure your 3512 DSU/CSU to automatically begin operating over an alternate line in the event of primary line failure, and to resume using the primary line when the problem ceases, with:

- Integral single-line restoral (analog), in which the 3512 establishes a dial connection through the ALT jack to the PSTN
- Integral switched-56 single-line restoral (SW 56), in which the 3512 establishes a connection through the ALT port to switched 56 kbps service
- External restoral (using an alternate line), in which the 3512's A/B switch routes data through Port 2 to:
  - — A modem that establishes a dial connection to the PSTN
  - — A device that establishes a digital service connection

  Figure 2-3 shows an example of external restoral cabling.

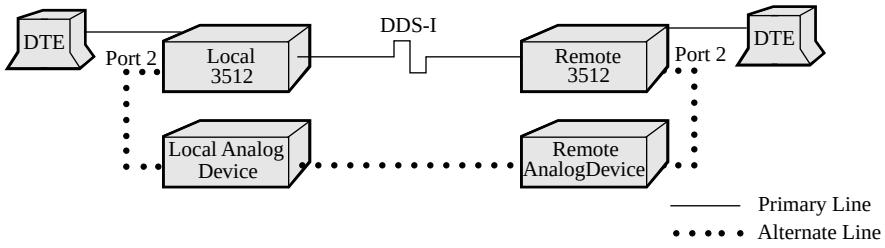
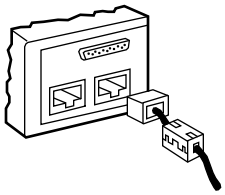


Figure 2-3. Cabling for External Restoral

SDC

The 3512 SDC also offers external restoral. Refer to Chapters 4 and 6 for information on configuring and operating the 3512 during restoral.
NOTE: To connect an external restoral device to the 3512, you must connect an A/B switch crossover cable to Port 2. Refer to Appendix A for cable requirements and product codes.



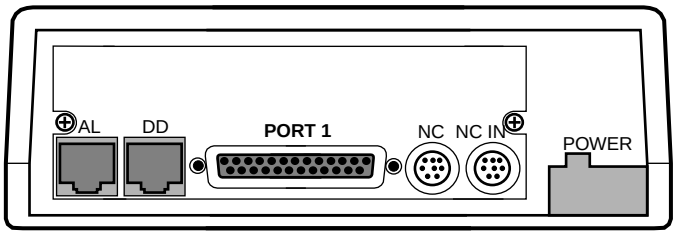
Caution

Install restoral cables with the ferrite end adjacent to the unit. The ferrite bead or cylinder ensures that your unit will operate in compliance with FCC RFI requirements.

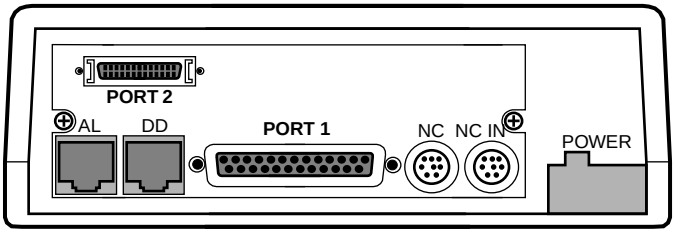
Connection to Data Terminal Equipment (DTE)

All 3512s

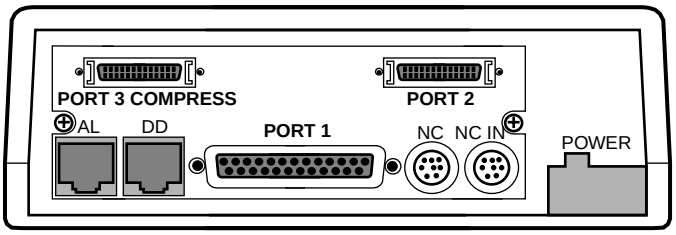
The maximum number of DTE connections varies with the number of ports.



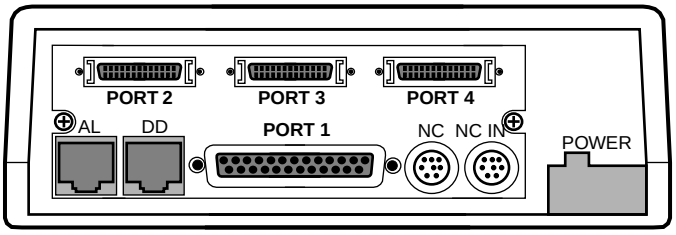
One-Port 3512 Rear Panel (Standalone)- Maximum One DTE Connection



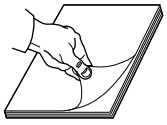
Two-Port 3512 Rear Panel (Standalone)- Maximum Two DTE Connections



Three-Port 3512 SDC Rear Panel (Standalone)- Maximum Three DTE Connections



Four -Port 3512 Rear Panel (Standalone)- Maximum Four DTE Connections



IMPORTANT: *All ports support data rates up to 64.0 kbps. At rates greater than 19.2 kbps, Motorola recommends that you configure the unit for the V.35 electrical interface. When using a Motorola 326XFAST Series Modem for external restoral, consult the 326X Series Modem documentation set for information on determining cable capacitance.*

Connect the 3512 to DTE(s) as follows:

On a *1-port 3512*, connect a DB-25 cable (or for a V.35 interface, a 34-pin Winchester adapter cable) to Port 1 and to a DTE or host computer.

IMPORTANT: *Use the permanently attached cable connector mounting screws to secure the cable to Port 1*.

On a *2-port 3512*, connect:

- A DB-25 cable (or for a V.35 interface, a 34-pin Winchester adapter cable) to Port 1 and to a DTE or host computer, *and*
- A DB-26 cable from Port 2 to a DTE. You may need adapter cables. **NOTE:** With a Motorola adapter cable, screw the cable connector onto the adapter cable *before* connecting to the 3512.

SDC only

On a *3-port 3512 SDC*, connect:

- A DB-25 cable (or for a V.35 interface, a 34-pin Winchester adapter cable) to Port 1 and to a DTE or host computer, *and*
- DB-26 cables from Ports 2 and 3 to DTEs. Port 3 is V.35 only. You may need an adapter cable. **NOTE:** With a Motorola adapter cable, screw the cable connector onto the adapter cable *before* connecting to the 3512 SDC.

On a *4-port 3512*, connect:

- A DB-25 cable (or for a V.35 interface, a 34-pin Winchester adapter cable) to Port 1 and to a DTE or host computer, *and*
- DB-26 cables from Ports 2, 3, and 4 to DTEs. You may need adapter cables. **NOTE:** With a Motorola adapter cable, screw the cable connector onto the adapter cable *before* connecting to the 3512.

Figures 2-4 and 2-5 show DTE connections on a 3512 and 3512 SDC, respectively.

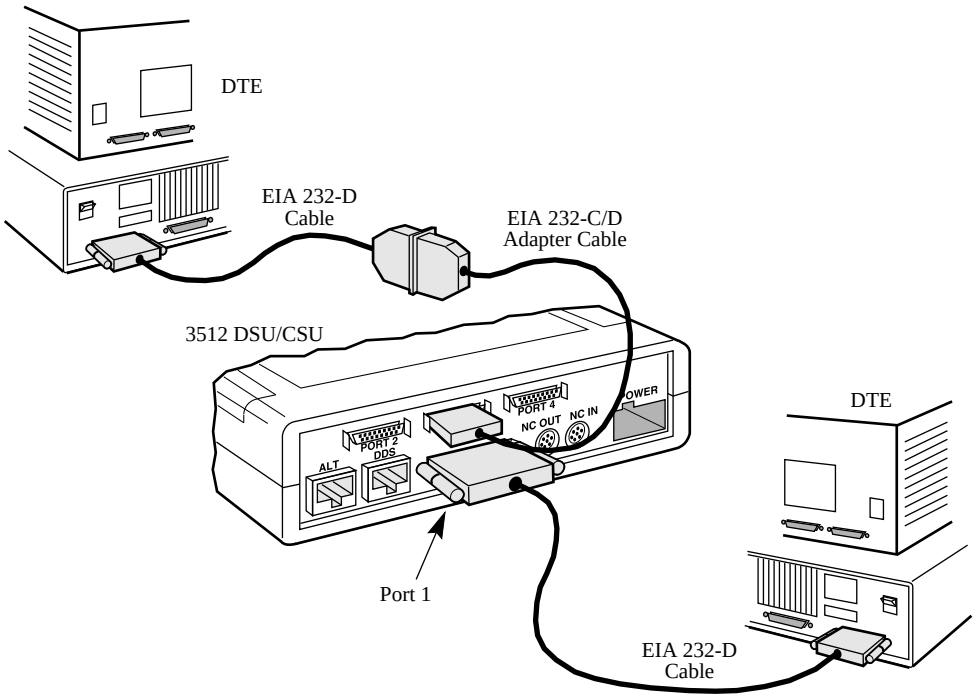


Figure 2-4. 3512 Connection to DTEs

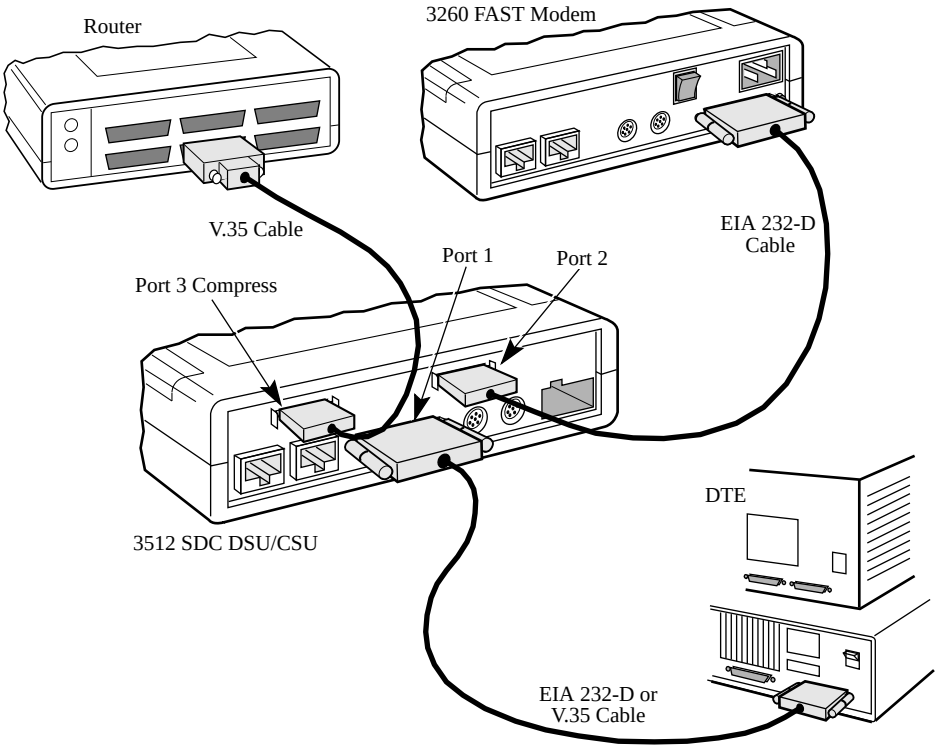


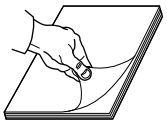
Figure 2-5. 3512 SDC Connection to DTEs

Connection to Network Management System (NMS)

All 3512s

You can connect one or more 3512s and 3512 SDCs to a Motorola NMS. Network management enables communication between the NMS and the 3512 for:

- Problem detection and isolation
- Device operating characteristics control
- Network information management



For more information on...	*Refer to...*
Network management control	Chapter 4, Configuring the 3512 Chapter 6, 3512 Operation

NOTE: For network control, set **NC Override**=Off (the default option) to enable normal operation.

To connect *one* 3512 to a network manager: connect a DB-25 Network Adapter cable, generally through a junction box, to an 8-pin DIN adapter cable. Connect the 8-pin DIN adapter cable to the 3512 **NC IN** connector.

To connect *multiple* 3512s (or comparable devices) to a network manager in a daisy-chain configuration, use the same cabling as above, plus an 8-pin DIN cable from the first 3512 **NC OUT** connector to the next **NC IN** connector, and so on (refer to Figure 2-6). To determine your specific cabling requirements, contact your Motorola sales representative.

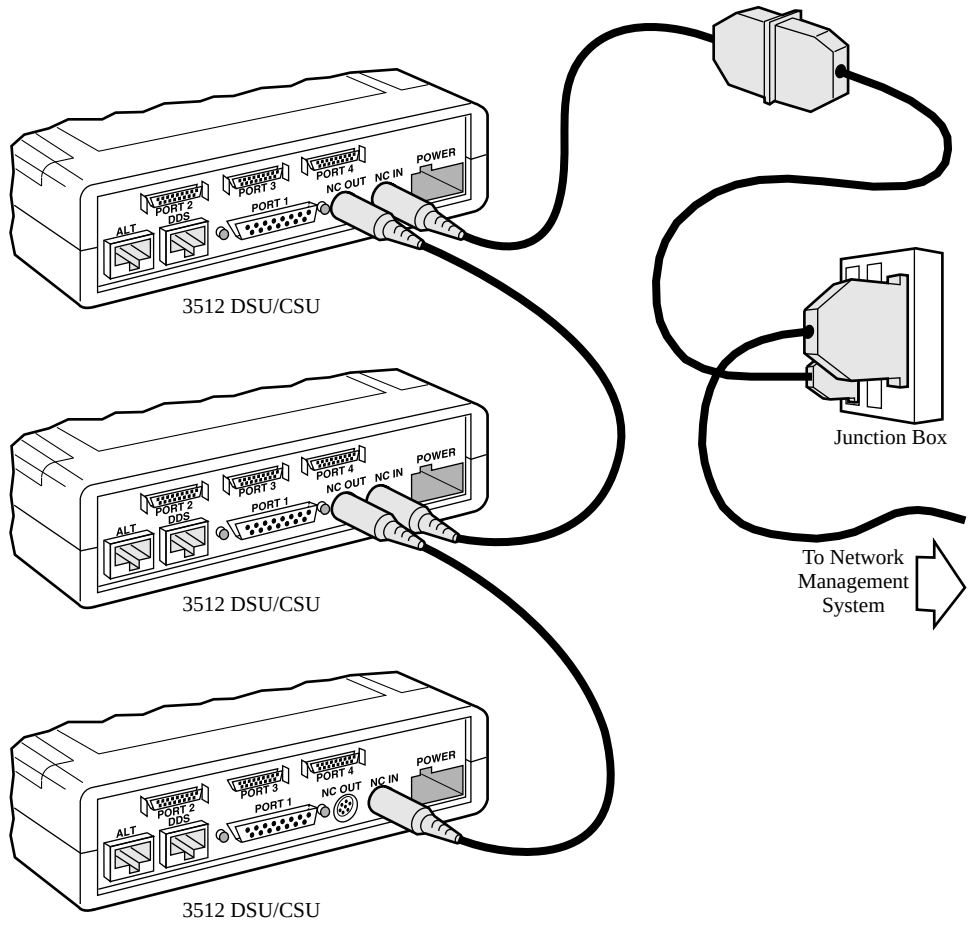


Figure 2-6. Multiple Devices in a Daisy Chain Connection to NMS

Caution

The Network Control adapter cable connected to the 3512 must be a braided, shielded cable with a metal, shielded hood. This is to ensure compliance with FCC requirements, relative to emitting radio frequency interference (RFI) to other sensitive electrical equipment. Contact your authorized Motorola sales representative to determine which cables are appropriate for your application.

Connection to Power Supply

All 3512s

Plug in the power cord to the 3512 or 3512 SDC and the power source. The 3512 automatically runs its self-test.

Installation Checkout

All 3512s

The Installation Checkout consists of running the 3512's automatic self-test.

Automatic Self-Test

The automatic self-test checks the 3512's circuitry and isolates problems within. It also can run the Dial Line Monitor (DLM) test. For details on DLM, refer to Chapter 4, Configuring the 3512, ∗RESTORAL. These tests run every time you plug in the power cord. View the 3512's self-test results:

- *If the 3512 is working properly,* the default message displays
- *If the 3512 fails the test,* an error message displays. After 25 seconds, the unit automatically resets itself and re-runs the self-test. If it fails again, the unit may need service. Call the Motorola Customer Support Center.

If you must return the unit, follow the Return Procedures at the back of this manual. Include the error messages with any failure symptoms you report.

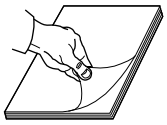
This completes the physical installation. Next, verify the quality of the primary line, as described in Chapter 4, Configuring the 3512.

Opening the 3512 Enclosure

All 3512s

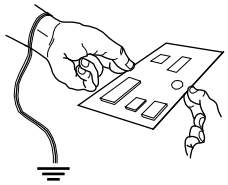
In specific circumstances, you may want to open a standalone 3512 enclosure:

- To adjust the EIA 232 or V.35 interface DIP switches to correct electrical interference problems (refer to Chapter 7, 3512 SDC Operation)
- To remove the unit from the enclosure base, preparatory to installing it in a Mini-Nest (refer to the *Mini-Nest User's Guide*, Part No. 09384)



Warning

Only trained service personnel should perform the procedure described in this section. Trained service personnel are defined as people trained in the technology of electrically powered information processing and business equipment, and who are adequately aware of the hazards associated with this type of equipment. Use of this procedure by unqualified personnel could result in personal injury or equipment damage, which could jeopardize your warranty and maintenance agreement.



Caution

Some components in the 3512 are sensitive to static electric discharges; these discharges can damage components.
Use proper handling and grounding precautions whenever you handle device cards or components.

Make sure you have a small flat screwdriver on hand. **NOTE:** To install a 3512 card module in a Motorola Mini-Nest, you need a Mini-Nest back panel conversion kit. Contact your Motorola sales representative for ordering information.

Open the 3512 enclosure as follows:

1) Unplug the power cord from the 3512.
2) Attach a grounding strap to yourself and ground.
3) Make a note of each cable connection for reassembly. Remove all cables from the 3512.
4) Open the front panel door by pushing down firmly to disengage the snap hinges that attach it to the base. Set the door aside.
5) Locate the six locking tabs along the sides of the enclosure (Figure 2-7). One side at a time, insert a flat screwdriver at a 45˚ angle into each tab slot. *Gently* pry off the clips to release the cover. *The screwdriver may damage the enclosure if you pry too hard.* Lift the cover off.

   The 3512's DIP switches are now accessible.

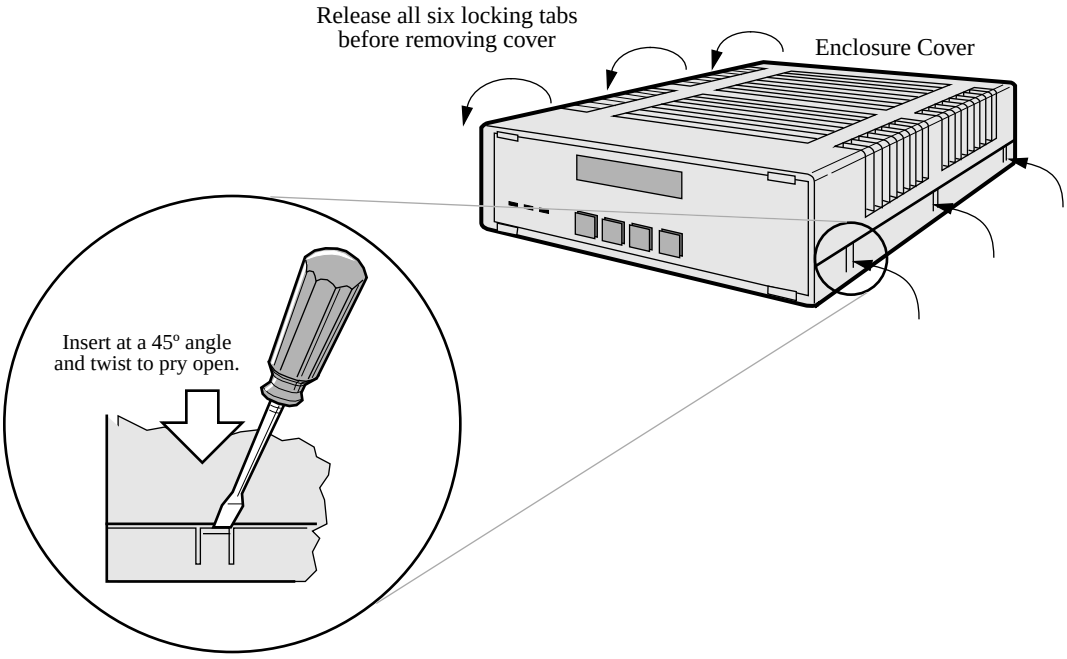


Figure 2-7. Removing the 3512 Enclosure Cover

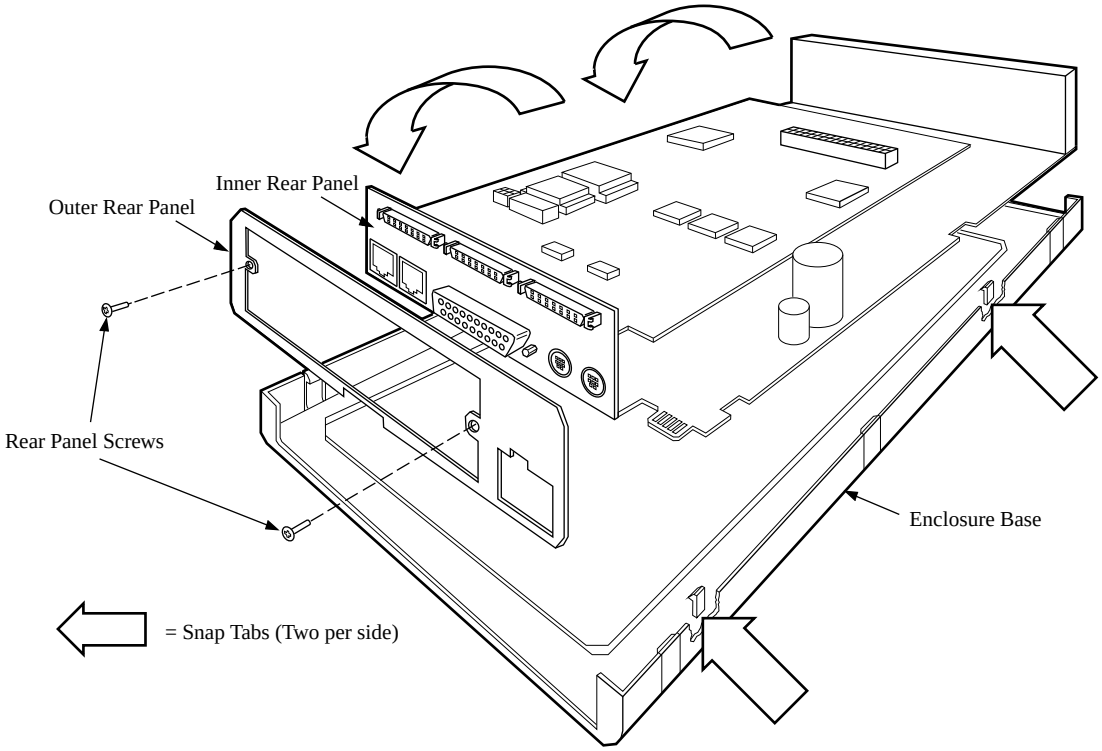


Figure 2-8. Removing the 3512 from the Enclosure Base

6) Locate the four snap tabs along the sides of the inner enclosure (Figure 2-8). Gently press the clips to free the 3512 unit from the base.

7) Locate the two screws that secure the outer rear panel to the inner rear panel and the 3512 (Figure 2-8). Remove the screws and outer rear panel. (Save the screws to secure the 3512 to the Mini-Nest.)

   The 3512 is ready to be installed in the Mini-Nest.