V.3600
Manual

For Sales or Service Contact:

Data Connect Enterprise
301-924-7400

http://www.data-connect.com/
sales@data-connect.com

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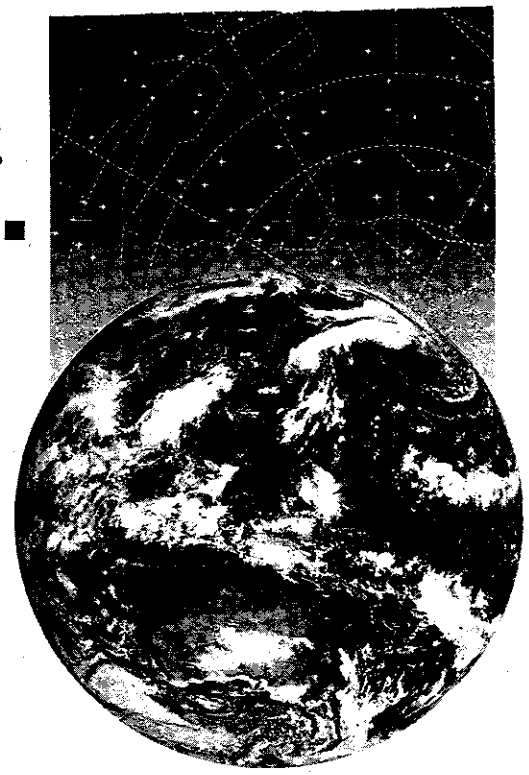

V.3600 *Series Modem*

Sync/Async and Fax Modem

USER'S GUIDE

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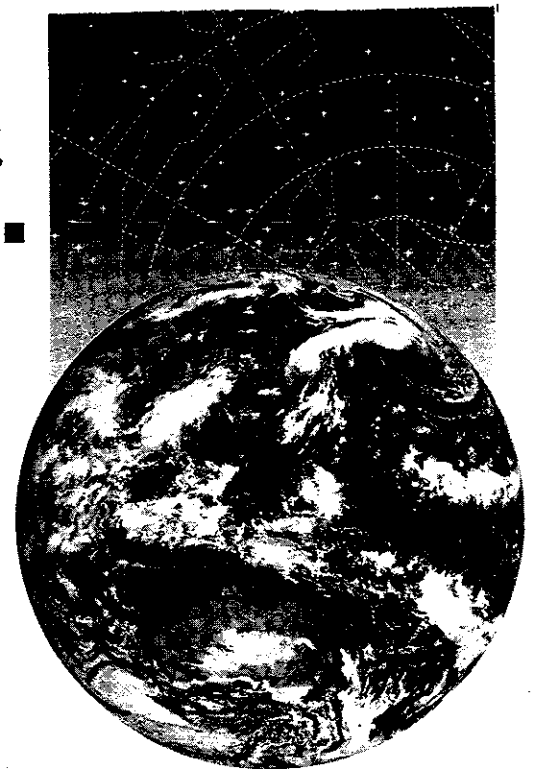

V.3600 Series Modem

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USER'S GUIDE

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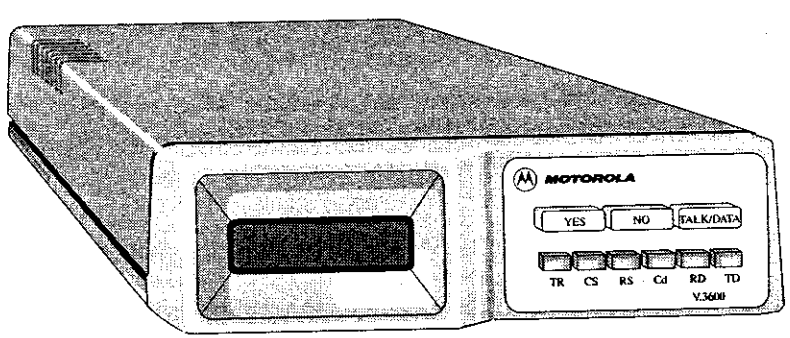
V.3600

Modem User's Guide



Motorola
20 Cabot Boulevard
Mansfield, Massachusetts 02048

Part No. T0097, C
Model V.3600

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Notice

Updates

Check Motorola Web sites as listed under "Service and Support" at the end of this *User's Guide* for the latest updates to our products.

Regulatory Information

FCC Requirements

This equipment complies with FCC rules Part 68. Located on the equipment is the FCC Registration Number and Ringer Equivalence Number (REN). You must provide this information to the telephone company if requested.

The Registration Number and REN is inscribed on the printed circuit board on insert cards, or on a label attached to either the chassis bottom or metal end-plate on standalone or rack models. The FCC requires that these numbers be prominently displayed on an outside surface of the equipment.

The REN is used to determine the number of devices you may legally connect to your telephone line. In most areas, the sum of the REN of all devices connected to one line must not exceed five (5.0). Contact your telephone company to determine the maximum REN for your calling area.

A variety of Universal Service Ordering Code (USOC) telephone wall jacks are available for different types of devices or services. The USOC jack required for this unit is RJ11/RJ41S/JM8.

The telephone company may change technical operations or procedures affecting your equipment. You will be notified of changes in advance to give you ample time to maintain uninterrupted telephone service.

If you experience trouble with this telephone equipment, please contact

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Mansfield, Massachusetts 02048
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for information on obtaining service or repairs. The telephone company may ask that you disconnect this equipment from the network until the problem has been resolved. If your equipment continues to disrupt the network the telephone company may temporarily disconnect service. If this occurs you will be informed of your right to file a complaint with the FCC.

This equipment may not be used on coin service provided by the telephone company. Connection to party lines is subject to state tariffs.

An FCC compliant telephone cord and modular plug are provided with this equipment, which is designed to connect to the telephone network or premises wiring using a compatible modular jack that is Part 68 compliant. See installation instructions in Chapter 2, Installation for details.

FCC Fax Branding Requirements

The Telephone Consumer Protection Act of 1991 makes it unlawful for any person to use a computer or other electronic device to send any message via a telephone, fax machine, or modem unless such message clearly contains in a margin at the top or bottom of each transmitted page or on the first page of the transmission, the date and time it is sent and an identification of the business or other entity, or other individual sending the message and the telephone number of the sending machine or such business, other entity or individual.

Programming of this information is a function of the fax software which runs on your computer. In order to program this information, please consult the documentation provided with your fax software.

FCC Part 15 Declaration Of Conformity

FOR HOME OR OFFICE USE
Model Name: V.3600, 115 VAC version only

Caution

This equipment uses, generates, and can radiate radio frequency energy interfering with radio communications if not installed and used according to the instruction manual. It has been tested and complies with the limits for a Class B computing device according to FCC Rules, Part 15. Operation of this equipment in a residential area may cause interference. If it does, you must correct the cause of the interference.

Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Shielded Cables

This product has been tested and complies with FCC limits for a Class B computing device. Testing was done with shielded computer cables. Using unshielded cables could cause your system to emit excess radio frequency, increasing the chance of interference. To comply with FCC regulations it is necessary to use shielded computer cables with your installation.

FOR OFFICE USE ONLY
Model Name: V.3600, all other versions

Caution

This equipment uses, generates, and can radiate radio frequency energy interfering with radio communications if not installed and used according to the instruction manual. It has been tested and complies with the limits for a Class A computing device according to FCC Rules, Part 15. Operation of this equipment in a residential area may cause interference. If it does, you must correct the cause of the interference.

Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Shielded Cables

This product has been tested and complies with FCC limits for a Class A computing device. Testing was done with shielded computer cables. Using unshielded cables could cause your system to emit excess radio frequency, increasing the chance of interference. To comply with FCC regulations it is necessary to use shielded computer cables with your installation.

Special Requirements For Canada

Certain requirements exist for data communication products manufactured for use in Canada. Principle among these requirements is the application of the IC label as described below. However, certain data communication products do not require the IC label nor adherence to IC requirements. If this is the case the IC label will not be affixed to the units.

Industry Canada (IC) Requirements

IC labels are affixed to each unit sold in Canada. This label has the certification number for that particular unit. The numbers are different for each model.

The Industry Canada label identifies certified equipment. This certification means that the equipment meets certain telecommunications network protective, operational, and safety requirements. IC does not guarantee the equipment will operate to the user's satisfaction.

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. In some cases, the company's inside wiring associated with a single line individual service may be extended by means of a certified connector assembly (telephone extension cord). The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations.

Repairs to certified equipment should be made by an authorized Canadian maintenance facility designated by the supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment. For their own protection users should ensure that the electrical ground connections of the power utility, telephone lines and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

Caution: Users should not attempt to make installation connections themselves, but should contact the appropriate electric inspection authority or electrician.

Ringer Equivalence Number

The Ringer Equivalence Number (REN) assigned to each terminal device provides an indication of the maximum number of terminals allowed to be connected to a telephone interface. The termination on an interface may consist of any combination of devices subject only to the requirement that the sum of the Ringer Equivalence Numbers of all the devices does not exceed five (5).

CANADIAN EMISSION REQUIREMENTS (V.3600, 115 Vac)

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

CANADIAN EMISSION REQUIREMENTS (V.3600, other versions)

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

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Chapter 1 Introduction

The Motorola V.3600 Series Modem provides synchronous, asynchronous, and fax capabilities for data communications or facsimile links between a local computer and a remote computer, fax, or data terminal equipment (DTE) located anywhere a standard or cellular telephone can reach. Data can be transmitted over standard dial-up lines, private leased telephone lines, or wireless communication.

The V.3600 Series Modem communicates at standard data rates up to 33,600 bps with compatible modems connected to similarly equipped computers, computer services, and data bases. Advanced error control and data compression ensure data integrity and increase data throughput.

When used with a Class 1 Fax software package, the modem can exchange fax documents at data rates up to 14,400 bps with any Group 3 fax machine or PC with a fax modem.

A high-level security feature allows secure operation of the modem, both locally and remotely.

Shelf-Mount Units

This *User's Guide* supports the desktop and shelf-mount versions of the V.3600. Operation and function are generally the same for both, but when there is a difference, the information primarily supports the desktop unit. Installation for each version is described in Chapter 2.

Features

The V.3600 is a flexible telecommunications tool that offers the following standard features.

Data Mode

- Full-duplex operation on two-wire public connections or two-wire or four-wire private telephone connections with two-wire public automatic or manual backup
- 300, 1200, 2400, 4800, 7200, 9600, 12000, 14400, 16800, 19200, 21600, 24000, 26400, 28800, 31200, 33600 bps DCE data rates
- Compatible with these standards:
  - CCITT V.34
  - CCITT V.33
  - CCITT V.32 bis
  - CCITT V.32
  - CCITT V.29
  - CCITT V.27
  - CCITT V.22 bis
  - CCITT V.22
  - CCITT V.21
  - CCITT V.13
  - Bell 212A
  - Bell 103
- Compatible with a variety of software packages
- Synchronous operation at all DCE data rates except Bell 103 300 and V.23
- Asynchronous operation at all DTE data rates up to 230.4 kbps
- CCITT V.42 bis and MNP level 5 data compression
- CCITT V.42 and MNP 4 error control protocol
- LCD configuration and status for easy operation
- Front panel lockout
- Autodial and Autoanswer capability
- Autobaud DTE rate and character format selection
- AT command set
- V.25 bis autodialer
- Configuration memory
- Phone number storage

- Caller ID
- Distinctive ring
- Multiple levels of security with auto callback and password protection and up to 50 users
- Automatic speed matching to originating modem
- Remote configuration using command mode or LCD
- Built-in standard diagnostics for testing phone line quality and modems at each end
- Flash upgrades

Fax Mode

- Fax speeds to 14.4 kbps
- HDLC framing to allow T.30 Error Correction Mode
- Standard Class 1 interface conforms to EIA-578
- Group 3 compatibility: CCITT V.21 Channel 2, V.27 ter, V.29, V.17
- Autoanswer under software control
- Automatic fax/data detection

Software

Software operates the features of the V.3600.

Communications Software

You must have communications software to transfer data. After installing the modem, consult your communications software user's manual for information on the software, commands, and features.

Class 1 Fax Communications Software

For sending faxes, a Class 1 fax software package is required.

Internet Browser

To connect to the Internet, Internet browser software is required.

Description

Functional

The V.3600 processes serial asynchronous data from a DTE at all standard rates from 300 bps to 230.4 kbps*, and serial synchronous data at rates from 300 to 33.6 kbps. Transmission can be over either dial-up lines or either two- or four-wire leased lines. The maximum line speed is 33.6 kbps. Built-in test features can determine system performance and isolate faults in the data link. Operation and configuration are controlled by the front panel LCD, the AT command set, or the V.25 bis command set.

*The 230.4 kbps DTE speed is available, but the V.3600 will not autobaud to 230.4 kbps. With the modem set for 115.2 kbps, enter AT\J2 to enable the speed and enter AT\J3 to disable it.

Physical

The V.3600 has a 32 character LCD front panel with three pushbuttons for option selection (Figure 1-1).

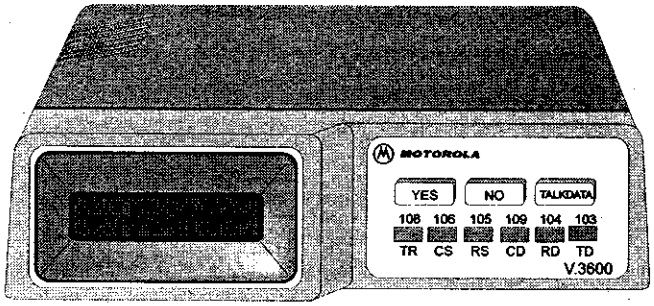


Figure 1-1. Typical Front Panel

The V.3600 rear panel has an EIA-232 DTE connector, an 8-pin TELSET/LEASED LINE jack, an 8-pin DIAL jack, the power switch, fuse, and cord (Figure 1-2).

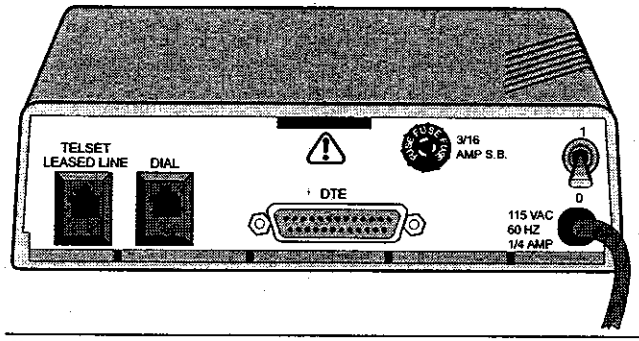


Figure 1-2. Rear Panel (115 Vac Model)

RM16M Unit

The shelf-mount RM16M unit (Figure 1-3) has edge connectors that insert into the shelf backplane. The shelf backplane performs the same functions as the standalone rear panel. Refer to the "Shelf-Mount RM16M V.3600 Installation" section on page 2-9.

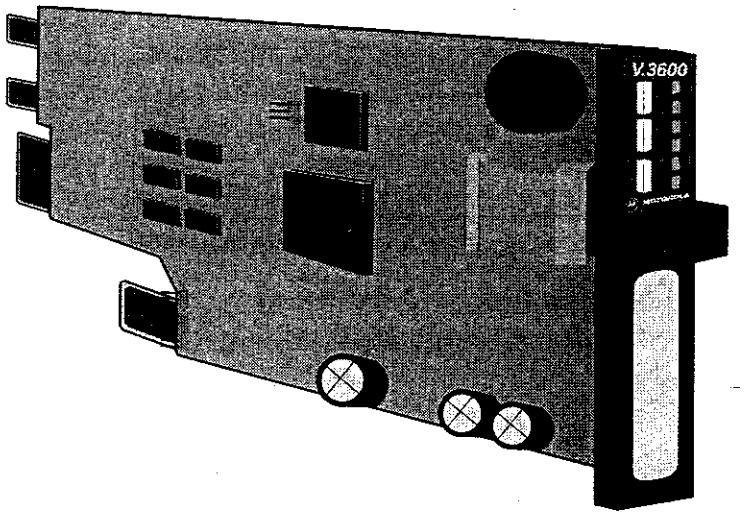


Figure 1-3. RM16M Version of the V.3600

Chapter 2
Installation

This chapter provides information on mechanical and electrical installation of the modem.

Electrical Installation

The rear panel (Figure 2-1) includes DTE cable and telephone line connectors.

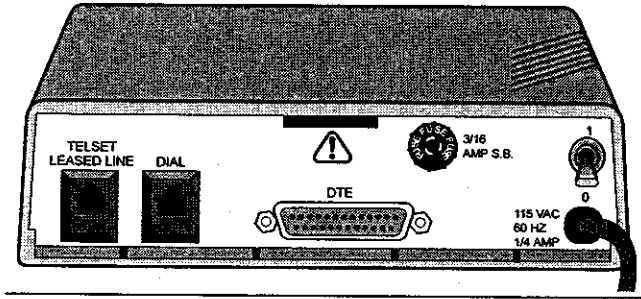


Figure 2-1. Rear Panel Connections (115 Vac Model)

AC Power Connection

Power is supplied through a 6-foot line cord with a grounded 3-wire plug.

DC Power Connection

Caution

To protect the DC-to-DC converter from damage, ensure the positive and negative leads are properly connected.

If the modem is equipped for 12-60 VDC power input, connect the power to the terminal block attached to the modem back panel. A chassis ground connection is also supplied on the terminal block.

If the modem is equipped for +/- 12/+5 VDC power input, connect the VDC power to the amp connector. A chassis ground connection is also supplied on the terminal block.

DTE Connection

The DTE connector is a 25-pin D-series type conforming to EIA-232 specifications. You must use a shielded DTE cable to comply with EMC requirements. Pin signals are shown in Figure 2-2 and are described in Table 2-1.

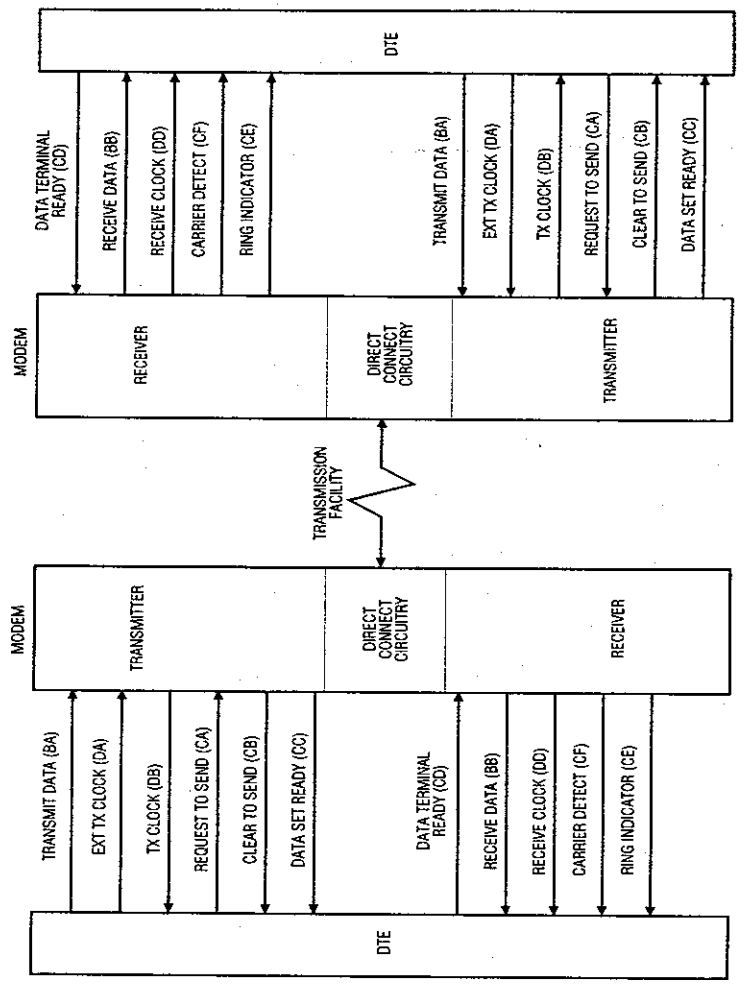


Figure 2-2. Digital Interface Signals

Table 2-1. Pin Signal Descriptions

Pin	EIA-232D	CCITT V.24	Signal	Description
1		101	Shield	No connection
2	BA	103	Transmitted Data	Serial digital data (to be modulated) from a data terminal or other digital data source: Synchronous data must be accompanied by the modem transmit clock (pin 15) or by an external data rate clock (pin 24). Data transitions should occur on positive-going clock transitions; asynchronous data does not require a transmit clock.
3	BB	104	Received Data	Serial digital data output to the DTE interface: Sync data is accompanied by an internal data rate (receive) clock (pin 17) that has positive-going transitions on the data transition. Async data does not require a receive clock.
4	CA	105	Request to Send	A positive level to the modem when data transmission is desired
5	CB	106	Clear to Send	A positive level from the modem in response to Request to Send and when the modem is ready to transmit. *
6	CC	107	Data Set Ready	A positive level from the modem when power is on and ready to operate: In dial-up operation, the modem must be off hook to give a high DSR signal.*
7	AB	102	Signal Ground	Signal or common signal and dc power ground. **
8	CF	109	Received Line Signal Detector	A positive level from the modem indicating the presence of a received signal (carrier detect). *
9	--		+12 Volts	+12 voltage reference
10	--		-12 Volts	-12 voltage reference

** Modem options may force these signals on or cause them to be ignored.*
*** Refer to Appendix C, Hardware Options.*
† This function can be disabled or its logic sense reversed by hardware straps.

Table 2-1. Pin Signal Descriptions (Continued)

Pin	EIA-232D	CCITT V.24	Signal	Description
11	--		Signal Quality Indicator	This circuit indicates probability of errors in the received data: a positive level indicates poor signal quality while a negative level indicates good signal quality. †
15	DB	114	Transmit Clock (DCE)	A transmit data rate clock output for use by an external data source: Positive clock transitions correspond to data transitions.
17	DD	115	Receive Clock	A receive data rate clock output for use by an external data sink: Positive clock transitions correspond to data transitions.
18	--	141	Local Loopback	A positive level causes the modem to enter the local analog loopback test mode.*
20	CD	108.2	Data Terminal Ready	This circuit is positive when the DTE is ready to originate or answer a call in dial-up operation. DTR must always be active (high) in 2-wire private line operation. Cycling DTR causes retraining.*
21	--	140	Remote Digital Loopback	A positive level causes a digital loopback test mode at the remote modem.*
22	CE	125	Ring Indicator	In direct dial operation this circuit is positive in response to an incoming ring signal.*
23	CH	111	Data Rate Select	Supplies a data rate control input to select primary or fallback data rate: Negative voltage selects primary data rate and positive voltage selects fallback data rate.*
24	DA	113	External Transmit Clock	A serial data rate clock input from the data source. Positive clock transitions correspond to data transitions.
25	--	142	Test Mode	Indicates the modem is in a test mode.

** Modem options may force these signals on or cause them to be ignored.*
*** Refer to Appendix C, Hardware Options.*
† This function can be disabled or its logic sense reversed by hardware straps.

Telephone Line Connection

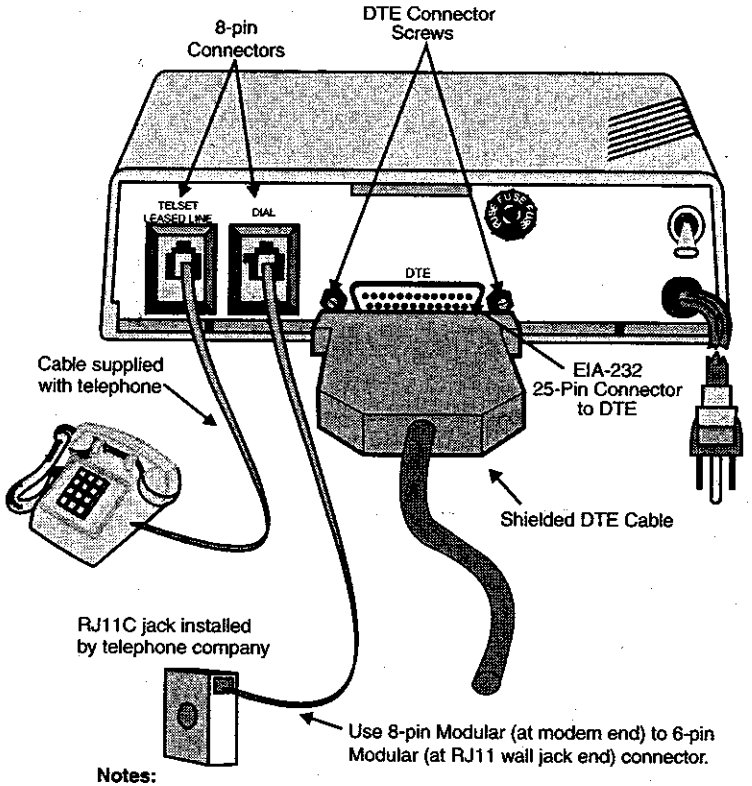
The modem operates in these line-related modes:

- Dial
- Leased

Dial Mode: PSTN Connection (DIAL jack)

The public switched telephone network (PSTN) is a two-wire dial network. Modems are registered with the Federal Communications Commission (FCC) for direct connection to the PSTN. The label on the chassis bottom gives the FCC registration number and other information required for network operation.

Direct connection to the PSTN is shown in Figure 2-3.



Notes:

1. The TELSET jack is provided on the back of the modem for use with a standard rotary or tone dial telephone regardless of the telephone jack arrangement ordered from the telephone company.
2. This standard rotary or tone dial telephone set can be used for originating a call or for voice communication. For sites requiring only auto answer capability, a phone is not needed.
3. For connector pin-outs, refer to Appendix B.

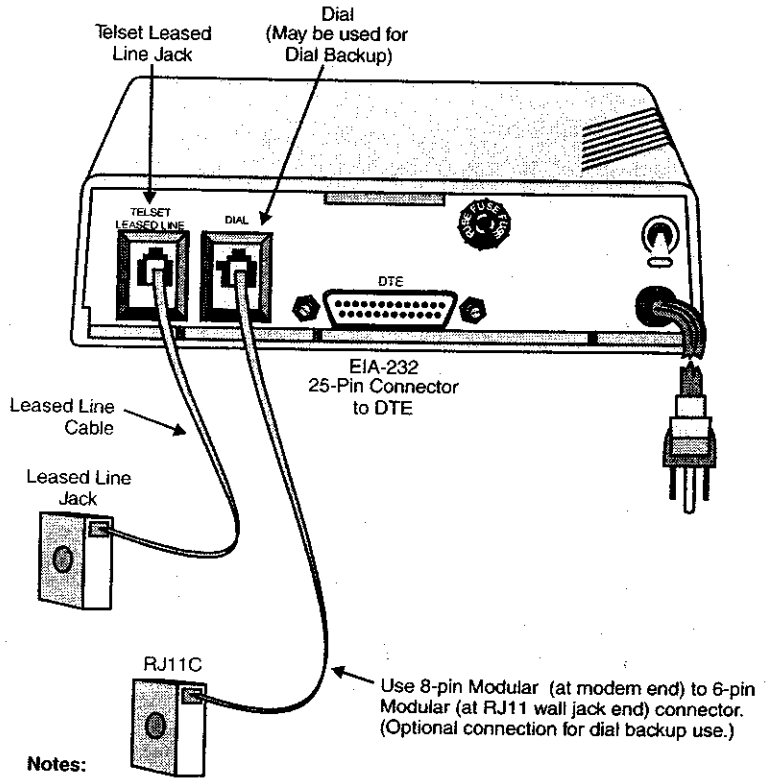
Figure 2-3. Dial-up Connection (115 Vac Model)

Leased Line Connection (TELSET/LEASED LINE Jack)

Private or leased lines use four-wire or two-wire lines. In this mode, the user configures the unit for four-wire or two-wire operation, depending on the private line service used.

The telephone company will install the leased line and wall jack at your site. The line connects to the modem at the 8-position TELSET/ LEASED LINE jack.

Figure 2-4 shows a typical modem hookup for operation over private leased lines with dial backup.



Notes:

1. Set the transmit output level to 0dBm.
2. DTR, which is the signal on pin 20 of the DTE interface, must be active or the option DTE IGNORED must be set for 2-wire OR 4-wire leased line operation.
3. The connection shown includes dial backup. Connect only the leased-line jack to the modem's Telset jack for regular Leased-line use.
4. For a 2-wire Leased-line connection, Pins 1 and 2 of the Leased-line connection are used for Tx and Rx data. For a 4-wire Leased-line connection, Pins 1 and 2 are used for Tx, and Pins 7 and 8 are used for Rx.
5. For connector pin-outs, refer to Appendix B.

Figure 2-4. Leased Line Connection (115 Vac Model)

Shelf-Mount RM16M V.3600 Installation

Go to Appendix C, Hardware Options to check the board options before installation.

Shelf-mount RM16M V.3600s should be installed or replaced by personnel familiar with shelf-mount installation. The unit has an edge connector that inserts into a receptacle located on the backplane and power bus.

Note

Figure 2-5 represents a typical dialup connection using one of the most common rack shelves. Connect cables as appropriate for any compatible RM16M shelf.

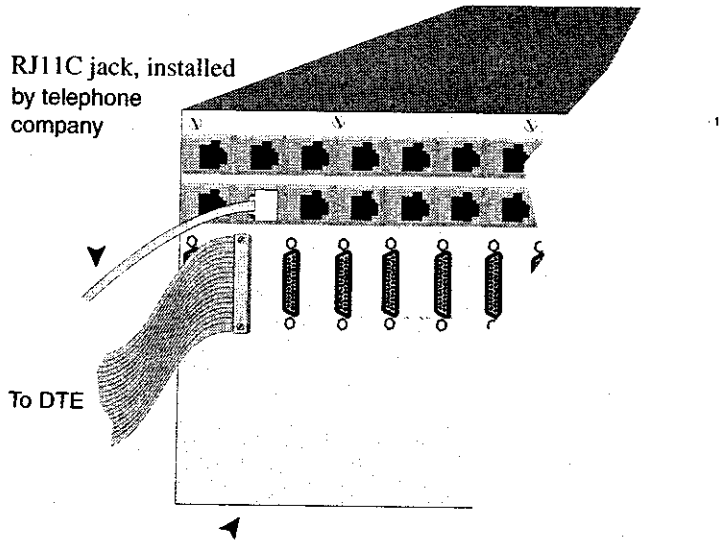


Figure 2-5. RM16M Connections