Chapter 2
Installation

GENERAL

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

ELECTRICAL INSTALLATION

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

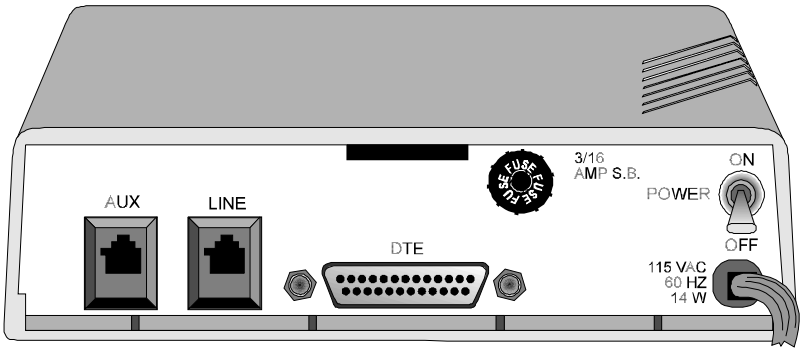


Figure 2-1 Rear Panel Connections

AC Power Connection

Power is supplied through a 6-foot line cord with a grounded 3-wire plug. If common ground is available through the third prong of the plug, a separate ground wire is not required.

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 dc power input, connect 12 to 60 VDC power to the terminal block attached to the modem back panel. 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. Pin signals are shown in Figure 2-2 and described in Table 2-1.

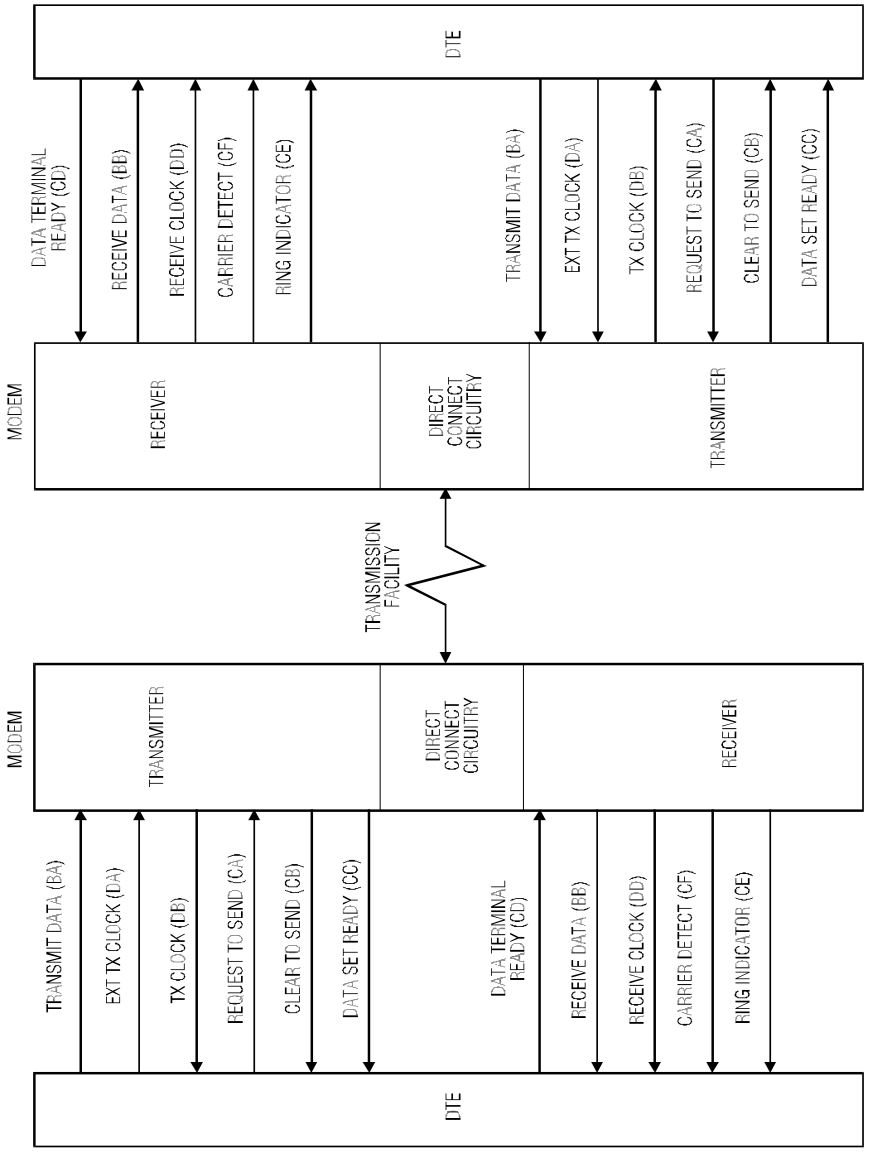


Figure 2-2 Digital Interface Signals

Table 2-1. Digital Interface Signal Descriptions

Pin No.	EIA-232D	CCITT V.24	Signal Name	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 or Common Return	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). *

** Modem options may force these signals on or cause them to be ignored.*

Table 2-1. Digital Interface Signal Descriptions (Continued)

Pin No.	EIA-232D	CCITT V.24	Signal Name	Description
9			+12 Volts	+12 voltage reference
10			-12 Volts	-12 voltage reference
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 (Loop 3) Control	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.*

** Modem options may force these signals on or cause them to be ignored.*

† This function can be disabled or its logic sense reversed by hardware straps. Refer to Strap Options.

Table 2-1. Digital Interface Signal Descriptions (Continued)

Pin No.	EIA-232D	CCITT V.24	Signal Name	Description
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

TELEPHONE LINE CONNECTION

The modem operates in one of three line-related modes:

- Permissive (PSTN)
- Programmable (PSTN)
- Private line

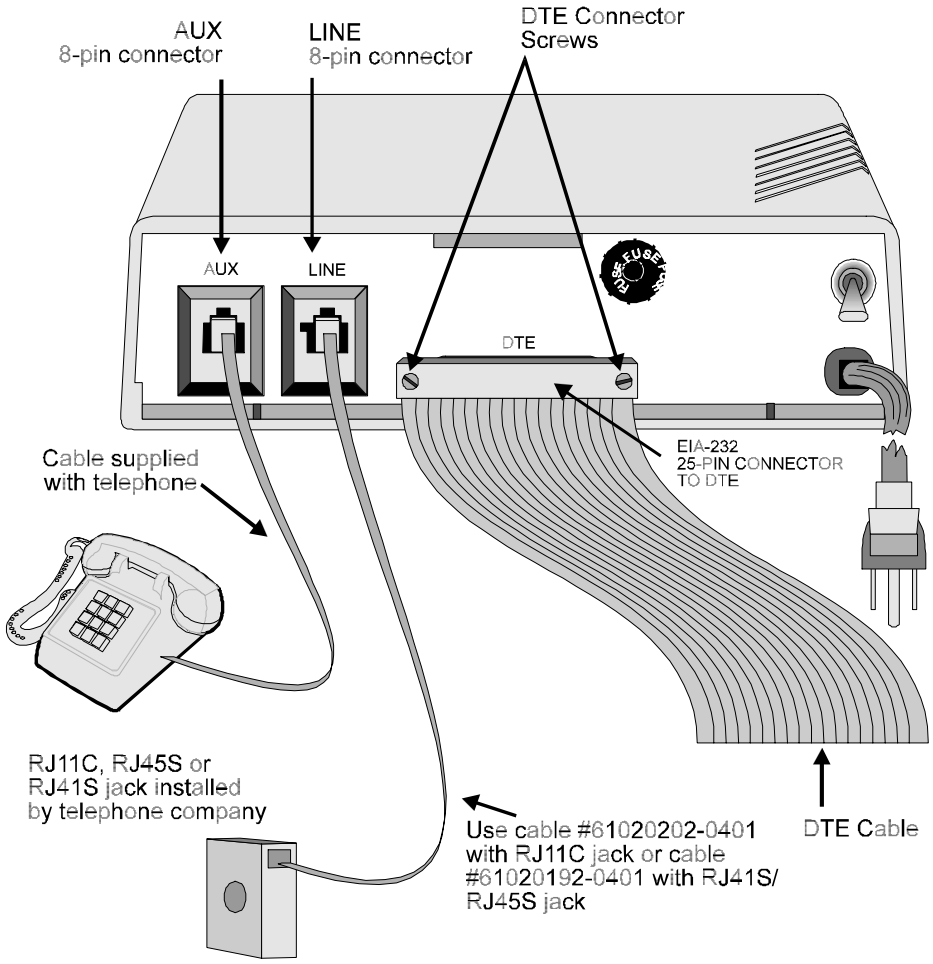
Permissive and programmable modes are used on the Public Switched Telephone Network (PSTN). Private line mode is used on 4-wire or 2-wire leased lines. The user must decide which mode to use and then select the telephone jack arrangement.

PSTN Connection

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

Direct connection to the PSTN provides two modes of operation (Figure 2-3):

- Permissive (standard domestic or home use)
- Programmable



Notes:

1. *The AUX 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 autoanswer capability, a phone is not needed.*

Figure 2-3 Dial-up Connection

Permissive

In permissive mode, the modem transmits a maximum signal level of -9 dBm. Signal loss between the modem and telephone company central office is not controlled.

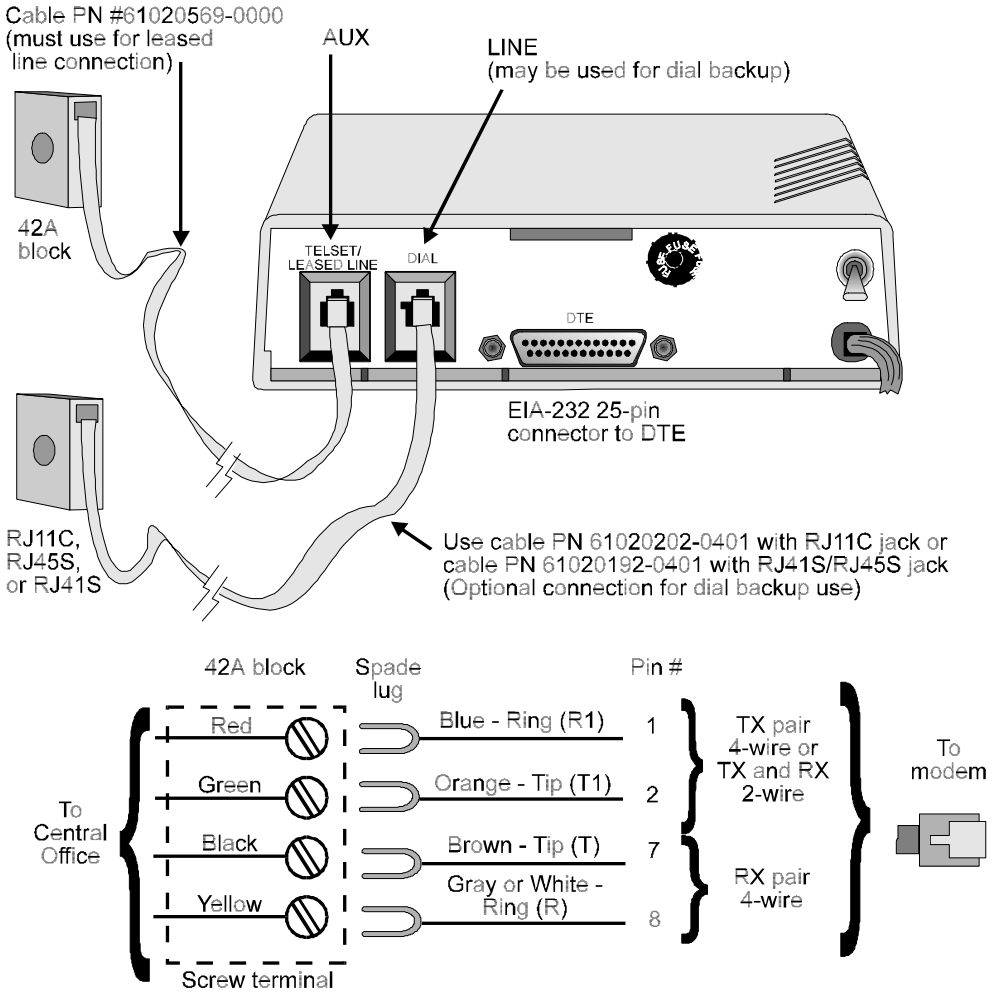
Programmable

Programmable mode corrects for the signal level loss between the modem and the telephone company central office. This is done by setting the modem transmit output signal level with a fixed-value programming resistor selected and installed in the jack by the telephone company. This allows the output signal to reach the central office at the optimum level of -12 dBm. Jack arrangements for this mode are the RJ45S (Programmable) and RJ41S (Universal). The RJ41S has a switch option that must be selected to Programmed (P). Cable PN 61020192-0401 is used to connect the LINE jack on the back of the modem to the RJ41S or RJ45S wall jack.

Leased Line Connection

Leased lines use either a 2-wire or 4-wire connection. The telephone company will install the leased line and wall jack at your site. The line connects to the modem at the 8-position AUX jack.

Figure 2-4 illustrates the typical hook-up of the modem for operation over private leased lines with dial backup.



Notes:

1. *Set the transmit output level to 0 dBm.*
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 42A block to the AUX jack for regular leaed line use.*

Figure 2-4 Leased Line Connection