Front View

Starting from the left side, this view shows:

- A set of nine LEDs. See page 10.
- A loopback test switch. See page 11.

Back View

Starting from the left side, this view shows:

- A 4-wire/2-wire terminal block for leased line. See page 8.
- A female, 25-pin RS-232 connector for connecting a standard DTE (RTU). See page 9.
- A **POWER** ON/OFF switch.
- A power cable. See page 8.

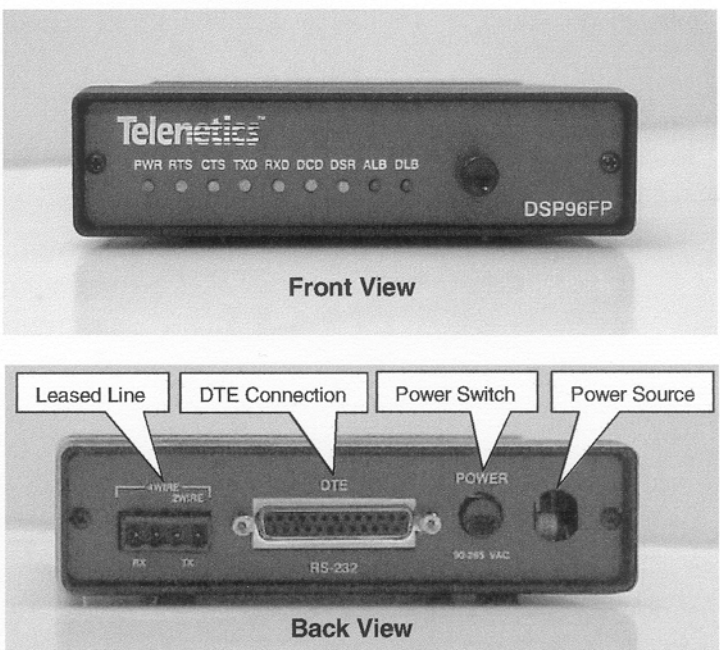

Figure 2-1. Front & Back Views of the DSP9600FP Modem

Finding a Suitable Location

The location you select should provide easy access to the back panel communications interface(s) and front panel power interface.

Configuring the DSP9600FP Modem

You configure the DSP9600FP modem using the two sets of DIP switches found on the bottom of the modem. Table 2-1 summarizes the switch settings. There is also a switch settings label on the bottom of the modem to help you configure the switches. The sections that follow Tables 2-1 and 2-2 provide additional information about the key switch settings.

Observe the following guidelines when setting switches:

- SW1 is the 10-position DIP switch and SW2 is the 8-position DIP switch.
- Turn off the modem before changing switch settings. The modem reads the switch settings on power-up.
- The factory default setting for all switch positions is OFF. This is equivalent to selecting a 10-bit character, 4-wire, full-duplex, 0 dBm transmit level configuration.

Note: The OFF position is equivalent to the OPEN position.

- Configure the modem for your specific application by setting the switches as shown in Tables 2-1 and 2-2. Use a sharp pin or small screwdriver to press down the rocker switch to select the ON or OFF position. Be sure to check all switch settings before turning on power to the modem.
- Select the maximum transmit signal level (SW2-1 through SW2-4) only if permitted by line conditions or your carrier provider (such as your local telephone company).

Table 2-1. DSP9600FP Modem Switch Settings

Control Function	DIP Switch	OFF	ON	Description
Data Rate	SW1-1	9600	4800	
Fast Train	SW1-2	Fast Train	Not Used	
Async Character	SW1-3	10 bits	11 bits	8 or 9 data bits
	SW1-4			Reserved
RTS-CTS Delay	SW1-5 & SW1-6	SW1-5=off, SW1-6=off		23 ms
		SW1-5=off, SW1-6=on		18 ms (future option)
		SW1-5=on, SW1-6=off		50 ms (future option)
2-Wire or 4-Wire	SW1-7	4-wire	2-wire	
Carrier Control	SW1-8	Switched	Constant	(see page 7.)
Rx Termination	SW1-9	Enabled	Disabled	600 Ohm receiver termination (see page 7)
Ground Option	SW1-10	Disconn.	Conn.	
Transmit Level (+3 to –14 dBm)	SW2-1 - SW2-4	(See Table 2-2)		
Receiver Dynamic Range	SW2-5	+3 to –30 dBm	-10 to –43 dBm	(see page 7)
TX Cable Equalizer	SW2-6	Disabled	Enabled	(see page 7)
RX Cable Equalizer	SW2-7	Disabled	Enabled	(see page 7)
Anti-streaming	SW-2-8	Inactive	Active	(see page 7)

Table 2-2. Transmit Level Settings

Transmit Level	DIP Switch Settings			
	SW2-1	SW2-2	SW2-3	SW2-4
0 dBm	OFF	OFF	OFF	OFF
-1 dBm	OFF	OFF	OFF	ON
-2 dBm	OFF	OFF	ON	OFF
-3 dBm	OFF	OFF	ON	ON
-4 dBm	OFF	ON	OFF	OFF
-5 dBm	OFF	ON	OFF	ON
-6 dBm	OFF	ON	ON	OFF
-7 dBm	OFF	ON	ON	ON
-8 dBm	ON	OFF	OFF	OFF
-9 dBm	ON	OFF	OFF	ON
-10 dBm	ON	OFF	ON	OFF
-11 dBm	ON	OFF	ON	ON
-12 dBm	ON	ON	OFF	OFF
-13 dBm	ON	ON	OFF	ON
-14 dBm	ON	ON	ON	OFF
+3 dBm	ON	ON	ON	ON

Configuring the Modem

Constant Carrier

Constant carrier mode allows DTEs such as asynchronous dumb terminals or RTUs to operate with the modems without the input RTS signal. When constant carrier mode is enabled, the DSP9600FP modem forces transmit carrier active and the RTS-CTS delay will be minimum (< 0.5 ms). Constant carrier mode can be used in 4-wire point-to-point or multi-point applications (from master to slaves only).

Receiver Termination

Normally, the modem receiver is terminated with 600 Ohms for impedance matching with the leased lines. In multi-point circuits over private metallic circuit, when multiple receivers are connected in parallel, only one modem should be terminated with 600 Ohms.

Receiver Dynamic Range

If the receive signal is strong (≥ –30 dBm) and the modems are operating in a noisy environment, select –30 dBm carrier detect threshold.

Cable Equalizer

The fixed Compromise Cable Equalizer is used when polling on long metallic circuits to improve or to extend the polling performance of the modem. Half of a 25kft 24AWG cable compromise filter is provided in the transmitter and half of a 25kft 24AWG cable compromise filter is provided in the receiver.

Anti-Streaming

Anti-streaming is typically used in multi-point applications to prevent a malfunctioning slave from occupying the line indefinitely. When anti-streaming is active, RTS status is monitored and the DSP9600FP modem can only transmit data for up to 27 seconds. Thereafter, the DSP9600FP modem's transmitter is automatically turned off. The DSP9600FP modem then looks for an ON-to-OFF transition of Request To Send (RTS) before proceeding with normal operation.

Connecting to a Transmission Line

The back panel of the DSP9600FP modem has a transmission line interface that can be configured for 2- or 4-wire, analog connection (see Figure 2-2 on the next page). This interface provides one pair used to transmit data (Tx and Tx) and one pair used to receive data (Rx and Rx).

Note: For communication to occur, the Rx line of one modem must connect to the Tx line of the other modem. The modem's Tx/Rx pair are non-polarized.

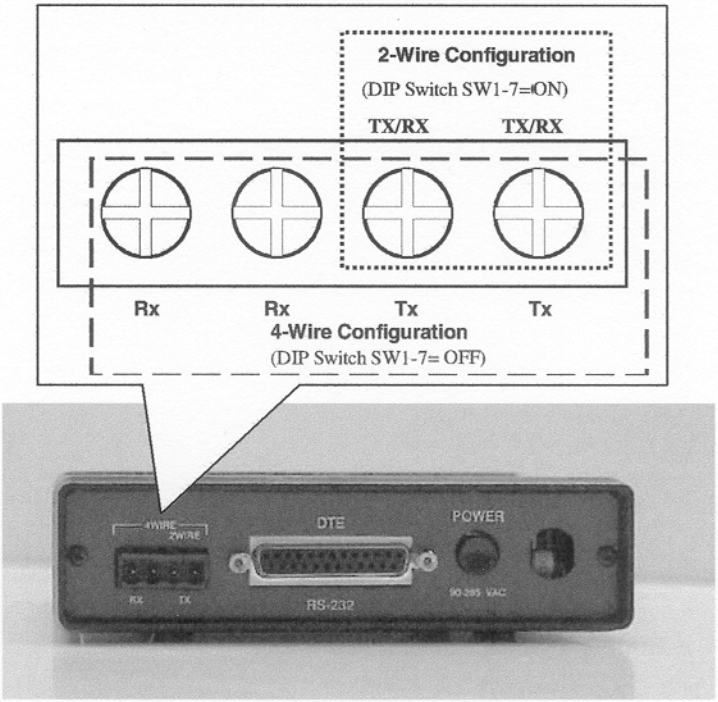

Figure 2-2. 2- & 4-Wire Configurations

Connecting to a Voltage Source

The back panel of the DSP9600FP modem provides the power interface. The DSP9600-FP modem supports two power supply ranges, depending on the specific model:

- 85 to 265 Volts AC, 50 or 60 Hz, single phase, or 85 to 400 Volts DC. Power consumption is 5.0 W typical.
- 10 to 52.8 Volts DC. Power consumption is 5.0 W typical.

WARNING

Before you connect a voltage source, observe the following power supply voltage guidelines. Otherwise, you will void your warranty if the wrong voltage is applied.

- Be sure the voltage source is within the permitted ranges shown above and marked on the back panel. Otherwise, your modem and any attached devices may be damaged.
- Customer-supplied cables must be suitable for the site environmental conditions.
- Surge protection is provided only if the earthed ground is connected.
- Be sure the power source is not controlled by a wall switch, which can be inadvertently turned off, shutting off power to the modem.

Connecting an RS-232 Device

The DSP9600FP modem back panel provides a female, 25-pin RS-232 serial port that accepts an attached RS-232 device (see Figure 2-2 on page 4).

Installation

This connector accepts a standard connection to a DTE (RTU) that conforms to the pin assignments shown under "RS-232 (RTU) Interface" on page 16.

LEDs

The front panel of the DSP9600FP modem has nine LEDs (see Figure 2-1 on page . Table 2-4 describes these LEDs.

Table 2-4. LED Description

LED	Description	Color
PWR	Power Input	Green
RTS	Request To Send	Yellow
CTS	Clear To Send	Yellow
TD	Transmit Data	Yellow
RD	Receive Data	Yellow
CD	Carrier Detect	Yellow
MR	Modem Ready	Yellow
ALB	Analog Loopback	Red*
DLB	Digital Loopback	Red*
* When the modem is in remote digital loopback, the **ALB** and **DLB** LEDs go ON		

These LEDs follow the state of the respective RS-232 signal.

Note: DCD active indicates that carrier is present and data at RxD is valid. DCD is not an energy detector; that is, DCD does not turn ON even in the presence of in-band signal or noise, unless the modem receiver detects a valid modem signal from another DSP9600FP modem and is receiving valid data.

Loopback Control Switch

The front panel of the DSP9600FP modem has a push button for initiating the following loopback diagnostic tests:

- Local analog loopback — started by pressing the button one time.
- Local digital loopback — started by pressing the button two times.
- Remote digital loopback — started by pressing the button three times. When the modem is in remote digital loopback, the **ALB** and **DLB** LEDs go ON

Figure 2-3 illustrates these three diagnostics.

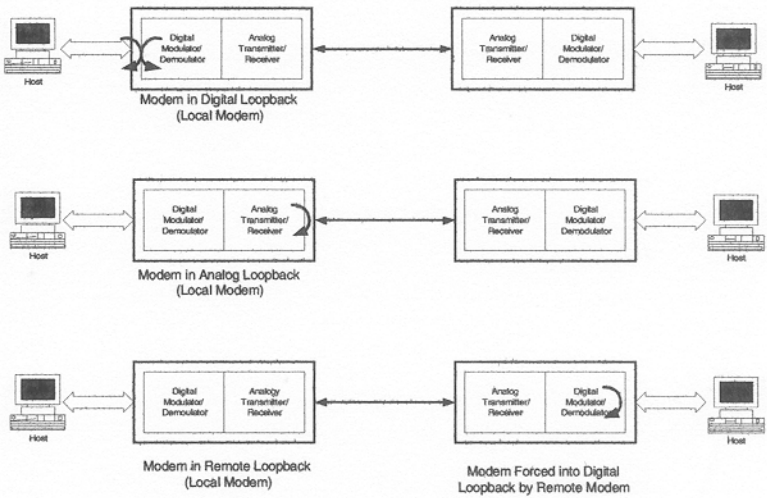

Figure 2-3. Loopback Diagnostics