



*Telebit
Standalone WorldBlazer Modem
User's Guide*

90257-01



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When connectivity counts.

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User's Guide***

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Preface

The *User's Guide* is extremely important. It contains information about your modem that the reference manual does not provide. Be sure to keep this guide in a safe place.

The *User's Guide* is provided to help you install and configure your WorldBlazer standalone modem. Read the *User's Guide* before you read the reference manual. If you follow the instructions in this guide, you may not need to consult your reference manual unless you have special requirements or need more specific instructions. However, we recommend that you spend some time reviewing your manual for additional information that is not covered in this guide.

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Telebit's WorldBlazer standalone modem supports full asynchronous and synchronous compatibility with dial-up V.32*bis* and V.32 modems. The modem features error control, data compression, facsimile capability, callback security, remote management, and diagnostics. The modem operates over both dial-up and 2-wire leased-line circuits and interoperates with CCITT and Bell standard modems.

The WorldBlazer standalone modem supports the enhanced Packetized Ensemble Protocol called TurboPEP, Telebit's new multicarrier modulation, as well as original PEP. The WorldBlazer standalone modem provides reliable and error-free DTE speeds from 300 to 115,200 bits per second (bps). The modem is shipped with prestored configurations that allow operation with a wide variety of industry-standard modems worldwide.

This chapter provides instructions for connecting the WorldBlazer modem between your equipment and the telephone line. The modem is designed to be used with a computer, terminal, or other serial device via an RS-232 serial interface port.

Equipment Checklist

Before installing the modem, make sure that you have the following equipment:

- The AC power cord and transformer provided with your modem.
- The seven-foot telephone cable supplied with your modem.
- A shielded RS-232 cable with a DB-25 male connector for the modem. Your computer dealer can assist you in obtaining the appropriate cable for your requirements. Pin assignments for the RS-232 connectors are provided in Appendix B, Interface Description.

If you do not have these items, obtain them before proceeding.

Installation Checklist

This section summarizes the sequence of steps you should follow to install the modem. For specific instructions on performing the procedures listed, refer to the specified page in this manual.

1. Before installing the modem in its final position, you may need to first connect it to a terminal (or personal computer with a terminal emulation program) and preconfigure it for your system (refer to Chapter 3, The Basics).
2. Verify that the modem's power switch is turned off, then connect the AC power cord (see below).
3. Connect a shielded RS-232 cable between the modem and your equipment (refer to page 2-4).
4. Connect the telephone line from the wall jack to the TO LINE connector on the modem (refer to page 2-4).
5. If desired, connect your telephone to the TO PHONE connector on the modem (refer to page 2-5).
6. Power up the modem and set it up, selecting the prestored configuration that best suits your application and making any changes as needed.

After you have completed the installation, the modem is ready for use. Refer to Chapter 3, The Basics, for information on configuring and using the modem.

Connecting the AC Power Cord

An AC power cord with a transformer assembly is supplied with the modem.

Warning: *To avoid damaging the modem, **ONLY** use the AC power cord and transformer provided with your WorldBlazer modem.*

Refer to Figure 2-1 while connecting the AC power cord to the modem:

1. Verify that the power switch (I/O) on the rear of the modem is turned off (O).
2. Attach the power cord to the connector labeled POWER on the rear panel of the modem. Ensure that the beveled edge of the plug is facing up so that it mates with the retainer clip on the connector.
3. Plug the other end of the power cord into a grounded AC wall outlet.

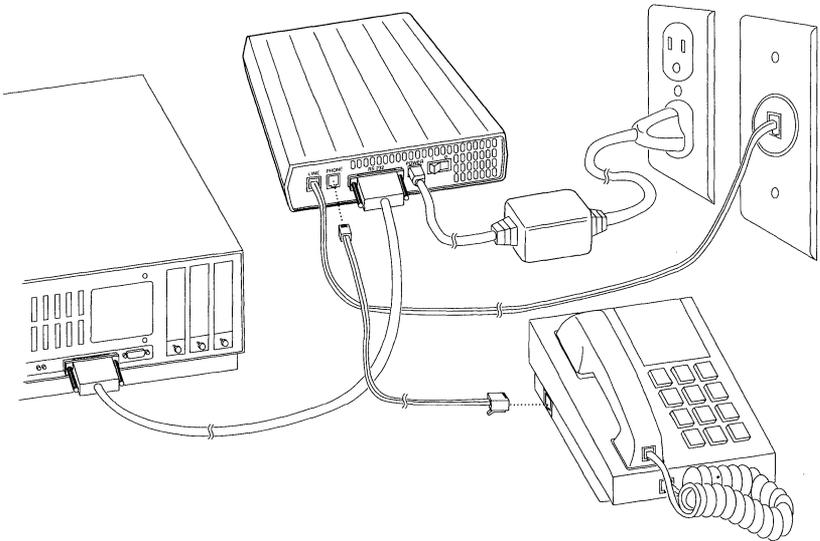


Figure 2-1. Cable Connections

Connecting the RS-232 Cable

A 25-pin female RS-232D connector, located on the back of the unit, is used to connect the modem to your computer or terminal. You must provide a shielded RS-232 cable. Pin assignments for the connectors are listed in Appendix B, Interface Descriptions.

Refer to Figure 2-1 while connecting the RS-232 cables to the modem:

1. Attach the male connector of the RS-232 cable to the female connector labeled RS-232D on the rear panel of the modem. Tighten the connector screws until snug.
2. Attach the other end of the RS-232 cable to the correct RS-232D connector on your DTE. Consult your equipment manual for the location of this connector.

Connecting the Telephone Line

A seven-foot telephone cable is provided with your modem. Use this cable to connect the modem to the telephone line as shown in Figure 2-1.

Attach one end of the provided RJ-11 telephone cable to the connector labeled TO LINE on the rear panel of the modem. Attach the other end to your telephone wall jack.

Connecting a Telephone

Your telephone can be connected to the modem, allowing you to make normal telephone calls while your modem is not in use. Simply connect the cord from your telephone to the connector labeled TO PHONE on the rear panel of the modem.

After Completing the Installation

Before powering on the WorldBlazer modem, refer to Chapter 3, The Basics, to determine how to configure the modem to ensure compatibility with your computer's data communications software.

This chapter presents a general overview of the WorldBlazer modem's operating characteristics and shows you how to enter commands and set registers that control the modem's operation.

Proceed with this chapter after the modem has been installed using the instructions in Chapter 2, Installation.

Front Panel Controls and Indicators

The modem's front panel contains two switches and 10 LED indicators, which indicate the current operating status of the modem (refer to Figure 3-1). The status indicators are described in Table 3-1.

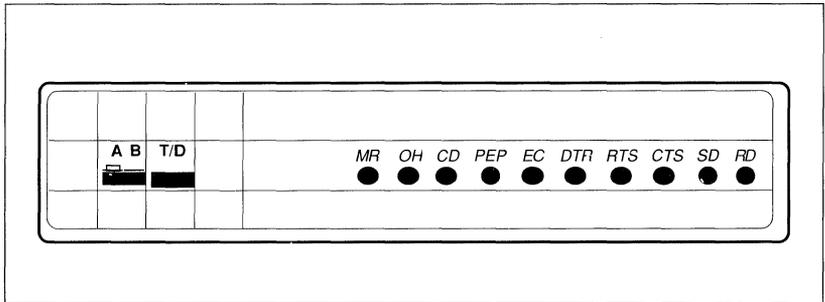


Figure 3-1. Front Panel Display

Table 3-1. Front Panel Status Indicators

LED	Description
MR	Modem Ready —Indicates that the modem is operational. Flashes on and off during a test.
OH	Off Hook —Indicates that the modem is using the telephone line.
CD	Carrier Detect —Indicates that the modem has established a connection with another modem. Flashes on and off during a retrain.
PEP	PEP Indicator —Indicates that the modem is in fast transmission operation using TurboPEP or PEP communications protocol.
EC	Error Control —Indicates when an error controlled (TurboPEP, PEP, V.42, or MNP) connection is established.
DTR	Data Terminal Ready —Indicates whether the DTE connected to the serial port is ready to transmit or receive data.
RTS	Request to Send —Indicates whether the DTE is able to receive data from the modem (DCE).
CTS	Clear to Send —Indicates whether the modem is ready to accept data from the DTE
SD	Send Data —Indicates that the DTE is sending data to the modem.
RD	Receive Data —Indicates that the DTE is receiving data from the modem.

Note: *Each of the following LEDs is also used in the factory prestored configuration matrix when the WorldBlazer is powered up with the talk/data (T/D) switch pressed: MR, OH, CD, PEP, and EC.*

The front panel switches are described in the following paragraphs.

- **A/B Configuration Select**

This switch is used to select one of two possible sets of operating configurations.

When you power up or reset the modem, it loads Configuration A's or Configuration B's operating parameters from nonvolatile memory, depending on the position of the A/B switch. If the switch is in the A position, the modem loads Configuration A; if the switch is in the B position, the modem loads Configuration B.

Changing the position of the A/B switch resets the modem and loads the corresponding new configuration from nonvolatile memory. Do not press the A/B switch while a communications session is in progress, as this disconnects the call.

- **T/D Switch**

This switch controls the modem's connection to the telephone line much like the hook switch on your telephone.

If you press the T/D switch while the modem is on hook (offline; OH indicator is off), the modem goes off hook (online) and attempts to connect in originate mode. This allows you to place a call manually using the telephone set, then switch to data mode when the call is established.

If you lift the telephone handset and then press the T/D switch while the modem is off hook (OH indicator is on), the modem goes on hook, allowing you to either disconnect the call or switch to voice communications.

If you press the T/D switch while switching on the power, the modem enters the configuration selection mode. This mode is described in the following sections.

Power Switch

The power switch (I/O), mounted on the rear of the modem, is used to turn the modem on or off. Each time you turn on the modem, it runs a series of diagnostic tests. After successfully completing the tests, the modem loads the configuration parameters previously stored in its nonvolatile memory into random access memory (RAM), and the modem ready (MR) LED turns on.

Modem Configuration Requirements

If you connected the modem directly to a terminal, you can enter the commands from the keyboard. When the modem is connected to a personal computer, use its data communications software or a terminal emulation program to configure and use the modem.

If you intend to use the modem with a mainframe computer or other serial device that accepts only incoming calls, you can use a terminal (or personal computer with a terminal emulation program) to preconfigure the modem's operating parameters and save them in nonvolatile memory.

Prestored Configurations

The WorldBlazer modem contains prestored configurations that address a wide range of applications. Before choosing a prestored configuration, decide which configuration meets the requirements of your system.

You can select the prestored configurations from the front panel or by using the &F commands described in Table 3-2.

Table 3-2. Prestored Configurations

Prestored Configuration	Front Panel LED					AT&F Command
	MR	OH	CD	PEP	EC	
TTY (factory default)	●	●	●	●	●	&F or &F0
Unattended Answer Mode	●					&F1
Intelligent Answer Mode		●				&F2
System V (HDB) (UUCP)	●	●				&F3
Ver 2 (BSD) (UUCP) 4.2–4.3 and SCO XENIX			●			&F4
Transparent Synchronous	●		●			&F5
Half-Duplex Transparent Synchronous LPDA Dialing		●	●			&F6
IBM AS 400 V.25bis Bit Synchronous	●	●	●			&F7
IBM PC/Mac with Software Flow Control (XON/XOFF)				●		&F8
IBM PC/Mac with hardware Flow Control (RTS/CTS)	●			●		&F9
Leased-Line Asynchronous Originate Mode		●		●		&F10
Leased-Line Asynchronous Answer Mode	●	●		●		&F11
Leased-Line Synchronous Originate Mode			●	●		&F12
Leased-Line Synchronous Answer Mode	●		●	●		&F13
Half-Duplex PEP SDLC with Command Set Disabled		●	●	●		&F14

Table 3-2. Prestored Configurations

Prestored Configuration	Front Panel LED					AT&F Command
	MR	OH	CD	PEP	EC	
Half-Duplex PEP SDLC with LPDA Dialing	●	●	●	●		&F15
V.25bis Operation					●	&F16
V.21 Originate Operation	●		●	●	●	&F29
V.21 Answer Operation		●	●	●	●	&F30

To select a prestored configuration from the front panel, use the T/D and A/B switches. The LEDs provide a visual display of the configuration selected.

Not all of the preset configurations are accessible from the front panel (refer to Table 3-3).

Table 3-3. Configurations Set Only With an AT&F Command

Prestored Configuration	AT&F Command
Asynchronous/Synchronous Mode	&F32
HP3000 (host)	&F33
HP3000 (terminal)	&F34

To load a prestored configuration into the WorldBlazer modem, perform the following steps. (Table 3-2 shows the various LED displays encountered while selecting a default setting.)

1. Determine which configuration you wish to set as a default. To store the configuration in Profile A, set the A/B switch to position A. To store the configuration in Profile B, set the A/B switch to position B.

2. Enter the configuration select mode by holding in the T/D switch while turning on the power. When the MR, OH, CD, PEP, and EC LEDs flash, release the T/D switch.
3. View the configuration choices by pressing the T/D switch for less than two seconds. The LEDs change to the next choice each time you press the T/D switch (refer to Table 3-2).
4. When the LEDs indicate the desired configuration, make your selection by pressing the T/D switch for more than two seconds. When the modem accepts your choice, the LEDs corresponding to the selected configuration flash. When the LEDs flash, release the T/D switch.
5. The LEDs turn off and the modem saves the configuration as Configuration A or B, as you selected. When the modem is set to the new configuration, the MR LED turns on.

Use Table 3-2 and Table 3-3 to help you select the configuration that meets your system requirements.

Note: *For additional information on the configurations, refer to the &F command description in your reference manual and Appendix B, Prestored Configurations.*

If you are a personal computer user, your communication software package may not provide the initialization sequence required to operate the WorldBlazer modem in your PC system environment. If the available options in the software package do not meet your system's needs, choose either of the prestored configurations with hardware (&F9) or software (&F8) flow control.

Configuration Memory Organization

The active configuration stored in RAM defines the current operating characteristics of the modem. The factory prestored configurations, permanently stored in ROM, contain the operating parameters most commonly used for data communications. To restore the prestored parameters to the active configuration, enter an &F command from a terminal or a PC running terminal emulation software or initialize the modem through the front panel switches.

You can modify and save the current operating parameters in nonvolatile memory as Configuration A or Configuration B using the &W command. When a new configuration is retrieved, its settings replace the current operating parameters. Refer to Chapter 3, AT Command Descriptions, in your reference manual for additional information on these commands.

AT Commands and S Registers

The WorldBlazer modem is equipped with commands and registers that you can set to meet the specific requirements of your data communications system. The WorldBlazer modem supports the Telebit Extended AT command set.

You may enter a command line of up to 80 characters in uppercase or lowercase. You must precede the first command in the line with an **AT** or **at** and follow the last command by pressing RETURN.

If you make an error while typing a command, backspace over the mistake, then type the correction. You cannot backspace over the AT prefix because it is interpreted immediately after being typed.

The notation *n* in the descriptions used in this manual represents a decimal numeric option. The option should immediately follow the command.

The notation *x* represents an assigned value. If you enter a command without a value when one is expected, the modem assumes a value of 0.

The = command enables the setting of S registers to desired values.

Entering a Command

To enter a command, type the prefix **AT** before the command. For example:

AT Q0

sets the Q command (Quiet Mode Select) to the numeric option (0), which indicates that the modem will report result codes to the DTE.

Refer to Chapter 3, AT Command Descriptions, in your reference manual for additional information on the Telebit Extended AT command set.

Setting a Register

The following example shows how to set a specific register:

AT S0=5

sets the S0 register to a value of 5 so the modem will answer an incoming call on the fifth ring.

Refer to Chapter 4, AT Register Descriptions, in your reference manual for complete descriptions of the registers.

Examining an S Register

The ? command allows you to inspect the contents of a given S register. The following example uses the S51 register:

```
AT S51?
```

The &V command allows you to view the current configuration.

Establishing a Connection

This section describes the procedures used to establish a connection.

Using the Dial Command

Use the Dial (D) command to place a call through the modem. When you enter the D command, the modem stops processing commands, dials the number indicated, and waits for a connection.

If no connection occurs within the specific period of time defined by the S7 register (normally 60 seconds), the command is canceled, and the modem returns to command mode (waits for the next command).

The following example shows you how to call another modem using tone dialing:

```
AT DT 555-6789
```

The next example shows you how to have the modem dial through a PBX using pulse dialing (DP9), wait for a dial tone for an outside line (W), dial a long distance telephone number, wait for 8 seconds (,,,) then switch to tone dialing (T) to charge the call to a telephone credit card:

```
AT DP9 W 0-408-555-6789,,,,T123-456-7890-1234
```

Using the T/D Switch

If you set the S104 register to 3, pressing the T/D switch automatically dials the first or second number in the number directory, depending on the current setting of the A/B switch. When the A/B switch is set to A, the modem dials the first number (~N0); if the switch is set to B, the modem dials the second number (~N1).

Performing a Reset

To perform a modem reset, press the A/B switch.

Using the Auto-Answer Feature

The modem automatically answers an incoming call after a specified number of rings and attempts to connect to the remote modem. If the modem does not detect an originate signal within a specified period of time, or if you send any character from your DTE before the modems establish a communication link, the modem sends a `NO CARRIER` result code.

If the modem detects a carrier, it sends a `CONNECT` result code indicating the successful connection and, depending on the X command setting, the speed of the connection or the serial interface.

Connecting During a Phone Conversation

If you are talking on the telephone and then want to use your computer to communicate with the remote location's computer, use the Dial (D) and Answer (A) commands.

1. Have the other party enter **ATD** to their modem without entering a telephone number.

2. Enter **AT A** to your modem within a few seconds. Both parties can hang up the telephone. The modem sends a `CONNECT` result message when the connection occurs provided that `Q0` is set.

If no carrier signal is detected within the timeout period defined by the `S7` register, the modem hangs up, sends a `NO CARRIER` result message, and returns to command state.

This command can be aborted by pressing any key (when `S64=0`). If the command is aborted, the modem sends a `NO CARRIER` result message.

Ending a Connection

To end a connection, disconnect through your communications software. If you are not using communications software, you can disconnect a call by pressing the T/D switch on the front panel of the modem.

Using a Leased Line

If you are using your WorldBlazer standalone modem with a leased line, refer to Appendix C, *Leased-Line Considerations*, for set-up and configuration information.

Telephone Dialer Test

To check the integrity of the analog/digital circuitry and telephone line interface in the standalone modem, perform the following:

1. Turn on the speaker (M1 command).
2. Enter the following tone dialing command:

AT DT 12345

3. Listen to the tones from the speaker to verify that the modem is tone dialing.
4. Press `RETURN` to hang up the line.
5. Enter the following pulse dialing command:

AT DP 12345

6. Listen for the relay clicking sounds to verify that the modem is pulse dialing.

Facsimile Capability

Your WorldBlazer standalone modem allows you to send and receive facsimiles. The Telecommunications Industry Association is creating a standard for facsimile modems. This emerging standard is called SP-2388, and the August 1990 draft of SP-2388 has become a de facto industry standard. The modem conforms to this de facto standard for Class 2 facsimile functionality.

In order to use the modem's facsimile capabilities, you need application software on your computer. The type of computer you use determines the particular software you need.

- For PC-compatible computers with DOS, use DOSFax software by Delrina Technology, Inc.
- For PC-compatible computers with Windows, use WinFax software by Delrina Technology, Inc.
- For PC-compatible computers with UNIX or XENIX, use Faximum by Faximum Software Inc.
- For Macintosh computers, use Quick Link II Fax by Smith Micro Software, Inc.

- For the UNIX environment, use Faximum by Faximum Software Inc.

Load the software recommended for your computer environment and follow the software's directions for using facsimile.

These software packages may not be the only products that are fully compatible with Telebit facsimile functionality. We advise you to check with individual software vendors for information on whether their products are fully compatible with the SP-2388 standard or Class 2 facsimile functionality.

If you have problems when using the facsimile function, contact your facsimile software vendor.

Standalone Modem Troubleshooting

Placing a Call

A common mistake is to connect the telephone line to the TO PHONE connector, which is used for connecting a telephone to the modem for voice communications.

Connect the telephone line to the TO LINE connector on the modem's back panel. Optionally, connect a telephone set to the TO PHONE connector.

Standalone Modem Configurations 4

The chapter describes command and register configurations that are specific to your WorldBlazer standalone modem.

Commands

L-Speaker Volume

Range: 0–3

Default: 2

The L command determines the speaker volume.

- L Same as L0
- L0 Low volume
- L1 Low volume
- L2 Medium volume
- L3 High volume

M-Speaker Mode

Range: 0–3

Default: 1

The M command controls the modem's internal speaker.

- M Same as M0.
- M0 Speaker disabled.
- M1 Speaker enabled only when dialing and connecting.
- M2 Speaker enabled at all times.
- M3 Speaker enabled after dialing until carrier detected.

Z–Reset

When the Z command is enabled and register S255=255, the standalone modem uses the A/B switch to determine which configuration to load.

&D–Data Terminal Ready Interpretation

The &D4 command disables T/D switch dialing and answering.

&F–Load Factory Configuration

You can load most of the &F configurations by using the T/D switch on the front panel of the modem.

&Q–Asynchronous/Synchronous Mode Select

When the &Q command is set to 2 and the A/B switch is set to A, the modem dials the telephone number in the first location (~N0). If the switch is set to B, the modem dials the number in the second location (~N1).

&W–Write Current Configuration

When the &W command is set to 0 and S255=255, you can also use the A/B switch to determine in which configuration to save.

% Command–Remote Modem Access

When you use the T/D switch to reset the modem to the TTY configuration (&F0), the active configuration has S45 set to 255 (enable remote access), S0 set to 1 (enable auto-answer), and S180 set to 3 (enable MNP). This allows remote command access to the modem through a TurboPEP, PEP, or MNP connection.

S Registers

S104–Automatic Dialing

In the standalone modem, when S104=1, the position of the A/B switch determines which number is dialed.

S105–T/D Switch Enable

The S105 register enables or disables the T/D switch on the front panel. This registers range is 0 through 2, and its default is 1. Possible contents for this register are as follows:

- 0 Disable the T/D switch.
- 1 Enable the T/D switch.
- 2 Enable the T/D switch only when the modem is on hook (the OH indicator is off).

This register does not prohibit the use of the T/D switch when initializing the modem to its factory default settings.

The WorldBlazer modem provides you with several prestored configurations. You can select configurations by using the AT &F*n* command, where *n* is the number of the stored configuration you have selected. After you select a configuration, you can use AT&V to display the configuration on the screen.

To select a prestored configuration from the front panel of the modem, use the T/D and A/B switches. The LEDs provide a visual display of the configuration selected (see Table A-1). Table A-1 also shows you how to select some of the prestored configurations from the front panel or by using the &F commands.

The following sections give suggested uses for each configuration, the appropriate &F command, and a screen display for that configuration. The commands and S registers that have been changed from &F0 are shown in boldface type for easy reference. S registers that have been changed from the &F0 factory default have a colon instead of an equal sign.

Table 3-1. Prestored Configurations

Prestored Configuration	Front Panel LED					AT&F Command
	MR	OH	CD	PEP	EC	
TTY (factory default)	●	●	●	●	●	&F or &F0
Unattended Answer Mode	●					&F1
Intelligent Answer Mode		●				&F2
System V (HDB) (UUCP)	●	●				&F3
Ver 2 (BSD) (UUCP) 4.2–4.3 and SCO XENIX			●			&F4
Transparent Synchronous	●		●			&F5
Half-Duplex Transparent Synchronous LPDA Dialing		●	●			&F6
IBM AS 400 V.25bis Bit Synchronous	●	●	●			&F7
IBM PC/Mac with Software Flow Control (XON/XOFF)				●		&F8
IBM PC/Mac with hardware Flow Control (RTS/CTS)	●			●		&F9
Leased-Line Asynchronous Originate Mode		●		●		&F10
Leased-Line Asynchronous Answer Mode	●	●		●		&F11
Leased-Line Synchronous Originate Mode			●	●		&F12
Leased-Line Synchronous Answer Mode	●		●	●		&F13
Half-Duplex PEP SDLC with Command Set Disabled		●	●	●		&F14

Table 3-1. Prestored Configurations

Prestored Configuration	Front Panel LED					AT&F Command
	MR	OH	CD	PEP	EC	
Half-Duplex PEP SDLC with LPDA Dialing	●	●	●	●		&F15
V.25bis Operation					●	&F16
V.21 Originate Operation	●		●	●	●	&F29
V.21 Answer Operation		●	●	●	●	&F30

**Configuration: TTY
Command: &F0**

The &F0 configuration is used with most asynchronous terminals or PCs emulating asynchronous terminal operation. The TTY settings are the factory defaults. The screen display is as follows:

```
WorldBlazer SA - Active Configuration
B1 E1 L2 M1 P Q0 V1 X1 Y0
&C0 &D0 &G0 &J0 &L0 &Q0 &R3 &S0 &T4 &X0
S000=0 S001=0 S002=43 S003=13 S004=10 S005=8 S006=2 S007=60
S008=2 S009=6 S010=14 S011=70 S012=50 S018=0 S025=5 S026=1
S038=0 S041=0 S045=0 S046=0 S047=4 S048=0 S050=0 S051=252
S056=17 S057=19 S058=3 S059=0 S060=0 S061=1 S062=15 S063=0
S064=0 S068=255 S069=0 S090=0 S092=0 S093=8 S094=1 S100=0
S104=0 S105=1 S111=255 S112=1 S113=126 S114=0 S115=0 S151=4
S155=0 S180=2 S181=1 S183=25 S190=1 S191=7 S253=10 S254=255
S255=255
```

When selected from the front panel, the following register differs from those stored in nonvolatile memory:

```
S000=1 S045=255
```

Configuration: Unattended Answer Mode Command: &F1

The &F1 configuration is used with most asynchronous front end processor (FEP) host ports operating at a fixed interface speed of 19,200 bps. The modem configuration is as follows:

```
WorldBlazer - Active Configuration
B1 E0 L2 M1 P Q2 V1 X1 Y0
&C1 &D3 &G0 &J0 &L0 &Q0 &R2 &S4 &T4 &X0
S000:1 S001=0 S002:255 S003=13 S004=10 S005=8 S006=2 S007=60
S008=2 S009=6 S010=14 S011=70 S012=50 S018=0 S025=5 S026=1
S038=0 S041=0 S045=0 S046=0 S047=4 S048=0 S050=0 S051:254
S056=17 S057=19 S058=3 S059=0 S060=0 S061:0 S062=15 S063=0
S064:1 S068=255 S069=0 S090=0 S092=0 S093=8 S094=1 S100=0
S104=0 S105=1 S111=255 S112=1 S113=126 S114=0 S115=0 S151=4
S155=0 S180=2 S181=1 S183=25 S190=1 S191=7 S253=10 S254=255
S255=255
```

Configuration: Intelligent Answer Mode Command: &F2

The &F2 configuration is used with most computers running intelligent communications software that interprets the modem result codes and adjusts its speed accordingly. The modem's interface speed is fixed at 19,200 bps for error-controlled connections, and it matches the connect speed for non-error-controlled connections. Modem result codes are enabled. The modem configuration is as follows:

```
WorldBlazer - Active Configuration
B1 E1 L2 M1 P Q0 V1 X4 Y0
&C1 &D3 &G0 &J0 &L0 &Q0 &R2 &S4 &T4 &X0
S000:1 S001=0 S002:255 S003=13 S004=10 S005=8 S006=2 S007=60
S008=2 S009=6 S010=14 S011=70 S012=50 S018=0 S025=5 S026=1
S038=0 S041=0 S045:255 S046=0 S047=4 S048=0 S050=0 S051:254
S056=17 S057=19 S058=3 S059=0 S060=0 S061=1 S062=15 S063=0
S064=0 S068=255 S069=0 S090=0 S092=0 S093=8 S094=1 S100=0
S104=0 S105=1 S111=255 S112=1 S113=126 S114=0 S115=0 S151=4
S155=0 S180=2 S181:0 S183=25 S190=1 S191=7 S253=10 S254=255
S255=255
```

Note: *The following two prestored configurations are intended for use in a UNIX/UUCP environment.*

For additional information when configuring the modem for UUCP protocol support, refer to your hardware and software configuration guides for your UNIX operating system or refer to the Nutshell handbook entitled Managing UUCP and Usenet, published by O'Reilly and Associates, Inc.

For specific configuration guides, call your Technical Support representatives at 408-734-5200.

Configuration: UNIX/UUCP with RTS/CTS Flow Control

Command: &F3

The &F3 configuration is used with UNIX systems that support hardware (RTS/CTS) flow control. When a user dials in, the modem locks its interface speed to 19,200 bps. When a user dials out, the modem uses autobaud to match the computer's speed from 300 to 38,400 bps. The modem defaults to UUCP protocol support for TurboPEP, PEP, and MNP connections. The modem configuration is as follows:

```
WorldBlazer - Active Configuration
B1 E1 L2 M1 P Q2 V1 X0 Y0
&C1 &D3 &G0 &J0 &L0 &Q0 &R3 &S1 &T4 &X0
S000:1 S001=0 S002:255 S003=13 S004=10 S005=8 S006=2 S007=60
S008=2 S009=6 S010=14 S011=70 S012=50 S018=0 S025=5 S026=1
S038=0 S041=0 S045=0 S046=0 S047=4 S048=0 S050=0 S051:254
S056=17 S057=19 S058:2 S059=0 S060=0 S061:0 S062=15 S063=0
S064:1 S068=255 S069=0 S090=0 S092=0 S093=8 S094=1 S100=0
S104=0 S105=1 S111:30 S112=1 S113=126 S114=0 S115=0 S151=4
S155=0 S180=2 S181=1 S183=25 S190=1 S191:6 S253=10 S254=255
S255=255
```

Configuration: UNIX/UUCP with XON/XOFF Flow Control Command: &F4

The &F4 configuration is used with UNIX systems that cannot support RTS/CTS flow control. The modem uses a compromise software (XON/XOFF) flow control setting that does not interfere with UUCP file transfers. When a user dials in, the modem locks its interface speed at 19,200 bps. When a user dials out, the modem uses autobaud to match the computer's speed from 300 to 38,400 bps. The modem defaults to UUCP protocol support for TurboPEP, PEP, and MNP connections. The modem configuration is as follows:

```
WorldBlazer - Active Configuration
B1 E1 L2 M1 P Q2 V1 X0 Y0
&C1 &D3 &G0 &J0 &L0 &Q0 &R3 &S1 &T4 &X0
S000:1 S001=0 S002:255 S003=13 S004=10 S005=8 S006=2 S007=60
S008=2 S009=6 S010=14 S011=70 S012=50 S018=0 S025=5 S026=1
S038=0 S041=0 S045=0 S046=0 S047=4 S048=0 S050=0 S051:254
S056=17 S057=19 S058:0 S059=0 S060=0 S061:0 S062=15 S063=0
S064:1 S068:3 S069=0 S090=0 S092=0 S093=8 S094=1 S100=0
S104=0 S105=1 S111:30 S112=1 S113=126 S114=0 S115=0 S151=4
S155=0 S180=2 S181=1 S183=25 S190=1 S191:6 S253=10 S254=255
S255=255
```

Configuration: Transparent Synchronous Mode Command: &F5

The &F5 configuration is used with most 14,400 bps synchronous terminals or devices. In this configuration, the modem operates in V.32bis transparent, synchronous, full-duplex mode at 14,400 bps. Fallback to slower modulations is allowed. The modem uses the DCE clock. The modem configuration is as follows:

```
WorldBlazer - Active Configuration
B1 E1 L2 M1 P Q1 V1 X1 Y0
&C1 &D2 &G0 &J0 &L0 &Q6 &R3 &S3 &T4 &X0
S000:1 S001=0 S002=43 S003=13 S004=10 S005=8 S006=2 S007=60
S008=2 S009=6 S010=14 S011=70 S012=50 S018=0 S025=5 S026=1
S038=0 S041=0 S045=0 S046=0 S047=4 S048=0 S050:7 S051:252
S056=17 S057=19 S058=3 S059=0 S060=0 S061=1 S062=15 S063=0
S064=0 S068=255 S069=0 S090=0 S092=0 S093=8 S094=1 S100=0
S104=0 S105=1 S111=255 S112=1 S113=126 S114=0 S115=0 S151=4
S155=0 S180:0 S181:0 S183=25 S190=1 S191=7 S253:0 S254=255
S255=255
```

Configuration: Half-Duplex Transparent Synchronous LPDA Dialing

Command: &F6

The &F6 configuration enables the modem to operate in V.32*bis* transparent, synchronous, half-duplex mode at 14,400 bps using LPDA dialing. The modem configuration is as follows:

```
WorldBlazer - Active Configuration
B1 E1 L2 M1 P Q0 V1 X1 Y0
&C6 &D2 &G0 &J0 &L0 &Q6 &R4 &S4 &T4 &X0
S000:1 S001=0 S002=43 S003=13 S004=10 S005=8 S006=2 S007=60
S008=2 S009=6 S010=14 S011=70 S012=50 S018=0 S025=5 S026:0
S038=0 S041=0 S045=0 S046=0 S047=4 S048=0 S050:7 S051=252
S056=17 S057=19 S058=3 S059=0 S060=0 S061=1 S062=15 S063=0
S064=0 S068=255 S069=0 S090=0 S092=0 S093=8 S094=1 S100=0
S104=0 S105=1 S111=255 S112=1 S113=126 S114=0 S115=0 S151=4
S155=0 S180:0 S181:0 S183=25 S190=1 S191=7 S253:32 S254=255
S255=255
```

Configuration: IBM AS 400 V.25*bis* Bit-Synchronous Operation

Command: &F7

The &F7 configuration enables the modem to operate in V.32*bis* transparent, synchronous, half-duplex IBM AS 400 mode with V.25*bis* synchronous dialing. The modem configuration is as follows:

```
WorldBlazer - Active Configuration
B1 E1 L2 M1 P Q0 V0 X0 Y0
&C6 &D2 &G0 &J0 &L0 &Q6 &R4 &S4 &T4 &X0
S000:2 S001=0 S002=43 S003=13 S004=10 S005=8 S006=2 S007=60
S008=2 S009=6 S010=14 S011=70 S012=50 S018=0 S025=5 S026:0
S038=0 S041=0 S045=0 S046=0 S047=4 S048=0 S050:7 S051=252
S056=17 S057=19 S058=3 S059=0 S060=0 S061:0 S062=15 S063=0
S064=0 S068=255 S069=0 S090=0 S092=0 S093=8 S094=1 S100=0
S104=0 S105=1 S111=255 S112=1 S113=126 S114=0 S115=0 S151=4
S155=0 S180:0 S181:0 S183=25 S190=1 S191=7 S253:22 S254=255
S255=255
```

Configuration: IBM PC or Mac with XON/XOFF Flow Control

Command: &F8

The &F8 configuration is used with most software packages that support software (XON/XOFF) flow control. The modem configuration is as follows:

WorldBlazer - Active Configuration

B1	E1	L2	M1	P	Q0	V1	X1	Y0
&C1 &D2 &G0 &J0 &L0 &Q0 &R3 &S0 &T4 &X0								
S000=0	S001=0	S002=43	S003=13	S004=10	S005=8	S006=2	S007=60	
S008=2	S009=6	S010=14	S011=70	S012=50	S018=0	S025=5	S026=1	
S038=0	S041=0	S045=0	S046=0	S047=4	S048=0	S050=0	S051=252	
S056=17	S057=19	S058:0	S059=0	S060=0	S061=1	S062=15	S063=0	
S064=0	S068:3	S069=0	S090=0	S092=0	S093=8	S094=1	S100=0	
S104=0	S105=1	S111=255	S112=1	S113=126	S114=0	S115=0	S151=4	
S155=0	S180=2	S181=1	S183=25	S190=1	S191:6	S253=10	S254=255	
S255=255								

Configuration: IBM PC or Mac with RTS/CTS Flow Control

Command: &F9

The &F9 configuration is used with most software packages that support hardware (RTS/CTS) flow control.

Note: *To use RTS/CTS flow control on a Macintosh, the communications software must support the feature, and you need a special cable as recommended in the software documentation. You must set the modem to ignore DTR (&D0).*

The modem configuration is as follows:

WorldBlazer - Active Configuration

B1	E1	L2	M1	P	Q0	V1	X1	Y0
&C1 &D2 &G0 &J0 &L0 &Q0 &R3 &S0 &T4 &X0								
S000=0	S001=0	S002=43	S003=13	S004=10	S005=8	S006=2	S007=60	
S008=2	S009=6	S010=14	S011=70	S012=50	S018=0	S025=5	S026=1	
S038=0	S041=0	S045=0	S046=0	S047=4	S048=0	S050=0	S051=252	
S056=17	S057=19	S058:2	S059=0	S060=0	S061=1	S062=15	S063=0	
S064=0	S068=255	S069=0	S090=0	S092=0	S093=8	S094=1	S100=0	
S104=0	S105=1	S111=255	S112=1	S113=126	S114=0	S115=0	S151=4	
S155=0	S180=2	S181=1	S183=25	S190=1	S191:6	S253=10	S254=255	
S255=255								

Configuration: Leased-Line Asynchronous Originate Mode

Command: &F10

The &F10 configuration is used in asynchronous point-to-point, 2-wire leased-line, V.32bis applications. The modem connects automatically on a leased line to another T3000 or WorldBlazer modem configured with the AT&F11 command (or any properly configured V.32bis modem) at 14,400 bps. If the modems do not negotiate error control, the connection is dropped. The modem configuration is as follows:

```
WorldBlazer - Active Configuration
B1 E0 L2 M1 P Q2 V1 X1 Y0
&C1 &D0 &G0 &J0 &L1 &Q0 &R3 &S1 &T4 &X0
S000=0 S001=0 S002:255 S003=13 S004=10 S005=8 S006=2 S007:255
S008=2 S009=6 S010=14 S011=70 S012=50 S018=0 S025=5 S026=1
S038=0 S041=0 S045=0 S046=0 S047=4 S048=0 S050:7 S051:5
S056=17 S057=19 S058=3 S059=0 S060=0 S061=1 S062=15 S063=0
S064:1 S068=255 S069=0 S090=0 S092=0 S093=8 S094:2 S100=0
S104=0 S105=1 S111=255 S112=1 S113=126 S114=0 S115=0 S151=4
S155=0 S180=2 S181:2 S183=25 S190=1 S191=7 S253=10 S254=255
S255=255
```

Configuration: Leased-Line Asynchronous Answer Mode

Command: &F11

The &F11 configuration is used in asynchronous point-to-point, 2-wire leased-line, V.32bis applications. The modem connects automatically on a leased line to another T3000 or WorldBlazer modem configured with the AT&F10 command (or any properly configured V.32bis modem) at 14,400 bps. If the modems do not negotiate error control, the connection is dropped. The modem configuration is as follows:

```
WorldBlazer - Active Configuration
B1 E0 L2 M1 P Q1 V1 X1 Y0
&C1 &D0 &G0 &J0 &L1 &Q0 &R3 &S1 &T4 &X0
S000:1 S001=0 S002:255 S003=13 S004=10 S005=8 S006=2 S007:255
S008=2 S009=6 S010=14 S011=70 S012=50 S018=0 S025=5 S026=1
S038=0 S041=0 S045=0 S046=0 S047=4 S048=0 S050:7 S051:5
S056=17 S057=19 S058=3 S059=0 S060=0 S061=1 S062=15 S063=0
S064:1 S068=255 S069=0 S090=0 S092=0 S093=8 S094:2 S100=0
S104=0 S105=1 S111=255 S112=1 S113=126 S114=0 S115=0 S151=4
S155=0 S180=2 S181:2 S183=25 S190=1 S191=7 S253=10 S254=255
S255=255
```

Configuration: Leased-Line Synchronous Originate Mode

Command: &F12

The &F12 configuration is used in synchronous point-to-point, 2-wire leased-line, V.32bis applications. The modem connects automatically on a leased line to another T3000 or WorldBlazer modem configured with the AT&F13 command (or any properly configured V.32bis modem) at 14,400 bps. The modem configuration is as follows:

WorldBlazer - Active Configuration

```
B1 E0 L2 M1 P Q1 V1 X1 Y0
&C1 &D0 &G0 &J0 &L1 &Q6 &R3 &S3 &T4 &X0
S000=0 S001=0 S002=43 S003=13 S004=10 S005=8 S006=2 S007:255
S008=2 S009=6 S010=14 S011=70 S012=50 S018=0 S025=5 S026=1
S038=0 S041=0 S045=0 S046=0 S047=4 S048=0 S050:7 S051=252
S056=17 S057=19 S058=3 S059=0 S060=0 S061=1 S062=15 S063=0
S064:1 S068=255 S069=0 S090=0 S092=0 S093=8 S094:2 S100=0
S104=0 S105=1 S111=255 S112=1 S113=126 S114=0 S115=0 S151=4
S155=0 S180:0 S181:0 S183=25 S190=1 S191=7 S253:0 S254=255
S255=255
```

Configuration: Leased-Line Synchronous Answer Mode

Command: &F13

The &F13 configuration is used in synchronous point-to-point, 2-wire leased-line, V.32bis applications. The modem connects automatically on a leased line to another T3000 or WorldBlazer modem configured with the AT&F12 command (or any properly configured V.32bis modem) at 14,400 bps. The modem configuration is as follows:

WorldBlazer - Active Configuration

```
B1 E0 L2 M1 P Q1 V1 X1 Y0
&C1 &D0 &G0 &J0 &L1 &Q6 &R3 &S3 &T4 &X0
S000:1 S001=0 S002=43 S003=13 S004=10 S005=8 S006=2 S007:255
S008=2 S009=6 S010=14 S011=70 S012=50 S018=0 S025=5 S026=1
S038=0 S041=0 S045=0 S046=0 S047=4 S048=0 S050:7 S051=252
S056=17 S057=19 S058=3 S059=0 S060=0 S061=1 S062=15 S063=0
S064:1 S068=255 S069=0 S090=0 S092=0 S093=8 S094:2 S100=0
S104=0 S105=1 S111=255 S112=1 S113=126 S114=0 S115=0 S151=4
S155=0 S180:0 S181:0 S183=25 S190=1 S191=7 S253:0 S254=255
S255=255
```

Configuration: Half-Duplex PEP SDLC with Command Set Disabled

Command: &F14

The &F14 configuration enables half-duplex TurboPEP or PEP SDLC with NRZI data encoding at a 19,200 bps synchronous clock speed with the command set disabled. The modem configuration is as follows:

WorldBlazer - Active Configuration

B1 E1 L2 M1 P Q0 V1 X1 Y0

&C3 &D2 &G0 &J0 &L0 **&Q6 &R7** **&S3** &T4 &X0

S000:1	S001=0	S002=43	S003=13	S004=10	S005=8	S006=2	S007=60
S008=2	S009=6	S010=14	S011=70	S012=50	S018=0	S025=5	S026:0
S038=0	S041=0	S045=0	S046=0	S047=4	S048=0	S050:255	S051=252
S056=17	S057=19	S058=3	S059=0	S060=0	S061=1	S062=15	S063=0
S064=0	S068=255	S069=0	S090=0	S092=0	S093=8	S094=1	S100=0
S104=0	S105=1	S111:50	S112=1	S113=126	S114=0	S115=0	S151:5
S155:1	S180:0	S181:0	S183=25	S190=1	S191=7	S253:0	S254=255
S255=255							

Configuration: Half-Duplex PEP SDLC LPDA Dialing Command: &F15

The &F15 configuration enables half-duplex TurboPEP or PEP SDLC with NRZ data encoding at a 19,200 bps synchronous clock speed with LPDA dialing. The modem configuration is as follows:

WorldBlazer - Active Configuration

B1 E1 L2 M1 P Q0 V1 X1 Y0

&C6 &D2 &G0 &J0 &L0 **&Q6 &R4** **&S4** &T4 &X0

S000:1	S001=0	S002=43	S003=13	S004=10	S005=8	S006=2	S007=60
S008=2	S009=6	S010=14	S011=70	S012=50	S018=0	S025=5	S026:0
S038=0	S041=0	S045=0	S046=0	S047=4	S048=0	S050:255	S051=252
S056=17	S057=19	S058=3	S059=0	S060=0	S061=1	S062=15	S063=0
S064=0	S068=255	S069=0	S090=0	S092=0	S093=8	S094=1	S100=0
S104=0	S105=1	S111:50	S112=1	S113=126	S114=0	S115=0	S151:5
S155=0	S180:0	S181:0	S183=25	S190=1	S191=7	S253:32	S254=255
S255=255							

Configuration: V.25bis Bit-Synchronous Operation Command: &F16

The &F16 configuration enables the modem to operate in V.32bis transparent, synchronous, half-duplex mode at 14,400 bps using V.25bis bit-synchronous dialing. The modem configuration is as follows:

```
WorldBlazer - Active Configuration
B1 E1 L2 M1 P Q0 V0 X0 Y0
&C1 &D4 &G0 &J0 &L0 &Q6 &R4 &S4 &T4 &X0
S000:2 S001=0 S002=43 S003=13 S004=10 S005=8 S006=2 S007=60
S008=2 S009=6 S010=14 S011=70 S012=50 S018=0 S025=5 S026:0
S038=0 S041=0 S045=0 S046=0 S047=4 S048=0 S050:7 S051=252
S056=17 S057=19 S058=3 S059=0 S060=0 S061:0 S062=15 S063=0
S064=0 S068=255 S069=0 S090=0 S092=0 S093=8 S094=1 S100=0
S104=0 S105=1 S111=255 S112=1 S113=126 S114=0 S115=0 S151=4
S155=0 S180:0 S181:0 S183=25 S190=1 S191=7 S253:22 S254=255
S255=255
```

Configuration: Manual V.21 Originate Operation Command: &F29

The &F29 configuration enables V.21 originate operation. The modem configuration is as follows:

```
WorldBlazer - Active Configuration
B0 E1 L2 M1 P Q1 V1 X1 Y0
&C1 &D4 &G0 &J0 &L0 &Q0 &R1 &S4 &T4 &X0
S000=0 S001=0 S002=43 S003=13 S004=10 S005=8 S006=2 S007=60
S008=2 S009=6 S010:0 S011=70 S012=50 S018=0 S025=5 S026=1
S038=0 S041=0 S045=0 S046=0 S047=4 S048=0 S050:1 S051:1
S056=17 S057=19 S058:0 S059=0 S060=0 S061:0 S062=15 S063=0
S064=0 S068:0 S069=0 S090=0 S092=0 S093=8 S094:0 S100=0
S104=0 S105=1 S111:0 S112=1 S113=126 S114=0 S115=0 S151=4
S155=0 S180:0 S181:0 S183=25 S190:0 S191:6 S253=10 S254=255
S255=255
```

Configuration: Manual V.21 Answer Operation Command: &F30

The &F30 configuration enables V.21 answer operation.
The modem configuration is as follows:

```
WorldBlazer - Active Configuration
B0 E1 L2 M1 P Q1 V1 X1 Y0
&C1 &D4 &G0 &J0 &L0 &Q0 &R1 &S4 &T4 &X0
S000=0 S001=0 S002=43 S003=13 S004=10 S005=8 S006=2 S007=60
S008=2 S009=6 S010=0 S011=70 S012=50 S018=0 S025=5 S026=1
S038=0 S041=0 S045=0 S046=0 S047=4 S048=0 S050=1 S051=0
S056=17 S057=19 S058=0 S059=0 S060=0 S061=0 S062=15 S063=0
S064=0 S068=0 S069=0 S090=0 S092=0 S093=8 S094=0 S100=1
S104=0 S105=1 S111=0 S112=1 S113=126 S114=0 S115=0 S151=4
S155=0 S180=0 S181=0 S183=25 S190=0 S191=6 S253=10 S254=255
S255=255
```

Configuration: Asynchronous/Synchronous &Q1 Command: &F32

The &F32 configuration enables asynchronous/
synchronous &Q1 operation. When the modem is not
online, the primary data and clock lines operate in
asynchronous mode. The modem switches to
synchronous mode when a connection to another modem
is established. The modem configuration is as follows:

```
WorldBlazer - Active Configuration
B1 E1 L2 M1 P Q2 V1 X1 Y0
&C1 &D2 &G0 &J0 &L0 &Q1 &R3 &S3 &T4 &X0
S000:1 S001=0 S002=43 S003=13 S004=10 S005=8 S006=2 S007=60
S008=2 S009=6 S010=14 S011=70 S012=50 S018=0 S025=5 S026=1
S038=0 S041=0 S045=0 S046=0 S047=4 S048=0 S050:7 S051=252
S056=17 S057=19 S058=3 S059=0 S060=0 S061=1 S062=15 S063=0
S064=0 S068=255 S069=0 S090=0 S092=0 S093=8 S094=1 S100=0
S104=0 S105=1 S111=255 S112=1 S113=126 S114=0 S115=0 S151=4
S155=0 S180:0 S181:0 S183=25 S190=1 S191=7 S253=10 S254=255
S255=255
```

**Configuration: HP 3000 Host
Command: &F33**

The &F33 configuration is used with an HP 3000 host system using ENQ/ACK flow control. The modem configuration is as follows:

```
WorldBlazer - Active Configuration
B1 E1 L2 M1 P Q0 V1 X1 Y0
&C1 &D2 &G0 &J0 &L0 &Q0 &R2 &S1 &T4 &X0
S000:1 S001=0 S002:255 S003=13 S004=10 S005=8 S006=2 S007=60
S008=2 S009=6 S010=14 S011=70 S012=50 S018=0 S025=5 S026=1
S038=0 S041=0 S045=0 S046=0 S047=4 S048=0 S050=0 S051=252
S056=17 S057=19 S058=3 S059=0 S060=0 S061=1 S062=15 S063=0
S064:1 S068=255 S069=0 S090=0 S092=0 S093=8 S094=1 S100=0
S104=0 S105=1 S111:40 S112=1 S113=126 S114=0 S115=0 S151=4
S155=0 S180:3 S181=1 S183=25 S190=1 S191=7 S253=10 S254=255
S255=255
```

**Configuration: HP 3000 Terminal
Command: &F34**

The &F34 configuration is used with an HP terminal using ENQ/ACK flow control when calling an HP 3000 host system using the same flow control. The modem configuration is as follows:

```
WorldBlazer - Active Configuration
B1 E1 L2 M1 P Q0 V1 X1 Y0
&C0 &D0 &G0 &J0 &L0 &Q0 &R3 &S0 &T4 &X0
S000=0 S001=0 S002=43 S003=13 S004=10 S005=8 S006=2 S007=60
S008=2 S009=6 S010=14 S011=70 S012=50 S018=0 S025=5 S026=1
S038=0 S041=0 S045=0 S046=0 S047=4 S048=0 S050=0 S051=252
S056=17 S057=19 S058=3 S059=0 S060=0 S061=1 S062=15 S063=0
S064=0 S068=255 S069=0 S090=0 S092=0 S093=8 S094=1 S100=0
S104=0 S105=1 S111:41 S112=1 S113=126 S114=0 S115=0 S151=4
S155=0 S180:3 S181=1 S183=25 S190=1 S191=7 S253=10 S254=255
S255=255
```

RS-232 Interface

Communication between the modem and the local DTE is accomplished through a 25-pin RS-232 connector.

The RS-232 standard is a set of specifications developed by the Electronic Industries Association (EIA) that applies to the transfer of data between the DTE and DCE. It is the most common DTE–DCE interface in use in the United States and is compatible with the International Telegraph and Telephone Consultative Committee Recommendation V.24 and V.28.

The RS-232 standard covers three specific areas:

- The electrical and mechanical characteristics of the interface
- The function of each interchange circuit
- Standard subsets of interchange circuit for specific communication system applications

A DB-25 connector is required with the RS-232 interface. Table B-1 lists the RS-232 interchange signals and their associated pins.

Note: *RS-423 drivers are used through the DB-25 connector to emulate RS-232 functionality between the WorldBlazer modem and the DTE interface.*

Table B-1. RS-232 Connector Pin Assignments

Pin	EIA Circuit	CCITT Signal	Description	From Modem	To Modem
1	AA	101	Protective Ground	X	X
2	BA	103	Transmitted Data (TD)		X
3	BB	104	Received Data (RD)	X	
4	CA	105	Request to Send (RTS)		X
5	CB	106	Clear to Send (CTS)	X	
6	CC	107	Data Set Ready (DSR)	X	
7	AB	102	Signal Ground	X	X
8	CF	109	Data Carrier Detected (DCD)	X	
9	-	-	Reserved for Test		
10	-	-	Reserved for Test		
11	-	-	Unassigned		
12	CI	122	DCE Signal Rate Select	X	
13	SCB	121	Unassigned		
14	SB	A118	Unassigned		
15	DB	114	DCE Transmit Signal Element Timing	X	
16	SBB	119	Unassigned		
17	DD	115	Receiver Signal Element Timing	X	
18	LL	141	Local Analog Loopback		X
19	SCA	120	Unassigned		X
20	CD	108.2	Data Terminal Ready (DTR)		X
21	RL/CG	140	Remote Digital Loopback		X

Table B-1. RS-232 Connector Pin Assignments

Pin	EIA Circuit	CCITT Signal	Description	From Modem	To Modem
22	CE	125	Ring Indicator (RI)	X	
23	CH	111	DTE Signal Rate Selector		X
24	DA	113	DTE Transmit Signal Element Timing		X
25	TM	142	Test Mode	X	

RS-232 Primary Interchange Signals

The modem hardware supports all data, control, and timing signals defined by the RS-232 standard. However, when operating in asynchronous mode, the modem uses only the primary interchange circuits defined in Figure B-1. This figure shows the cable configuration for connecting the modem to a standard DTE device.

For systems that require the modem to act as a DTE connected to a DCE device, a specially modified RS-232 cable must be used. Figure B-2 shows a recommended cable arrangement for this case. Your system may require a different cable configuration. Consult your equipment manual for specific cabling requirements.

The primary interchange signals used by the modem in asynchronous mode are described in the following sections.

Protective and Signal Ground

Pin 1 (protective ground) should be electrically connected to the frame or chassis of the equipment. The equipment may be further connected to an external earth ground as required by local electrical codes. Pin 7 (signal ground) is

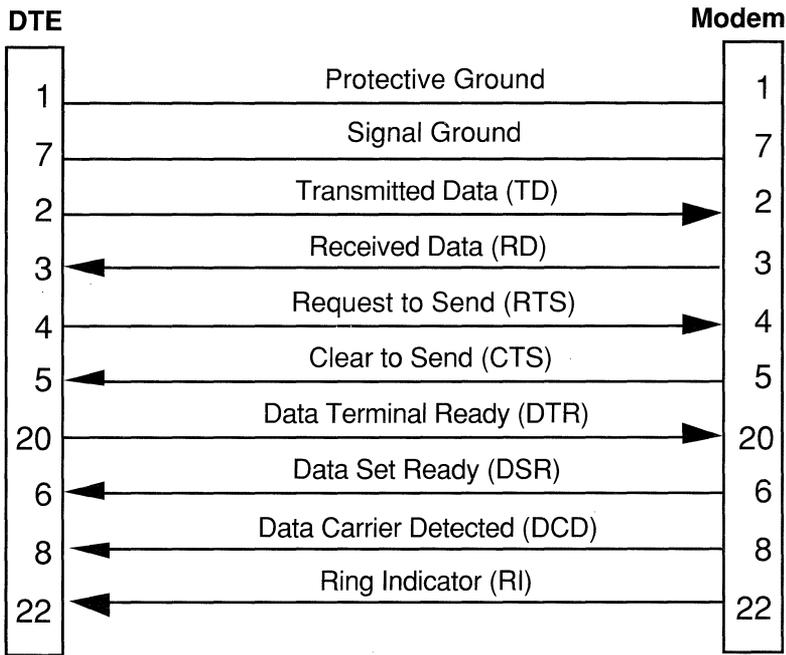


Figure B-1. Asynchronous RS-232 Cable Diagram

the common reference signal ground for all of the other pins. This line should be connected at both ends to complete the signal circuits.

Transmitted Data (TD) and Received Data (RD)

These two signal lines transfer data between the DTE (computer or terminal) and the DCE (modem). All signal names are as viewed from the DTE. Therefore, the DTE transmits data on the transmitted data (TD) line (pin 2) and receives data on the received data line (pin 3). However, the DCE receives data from the DTE on the transmitted data line (pin 2) and sends data to the DTE on the received data line (pin 3).

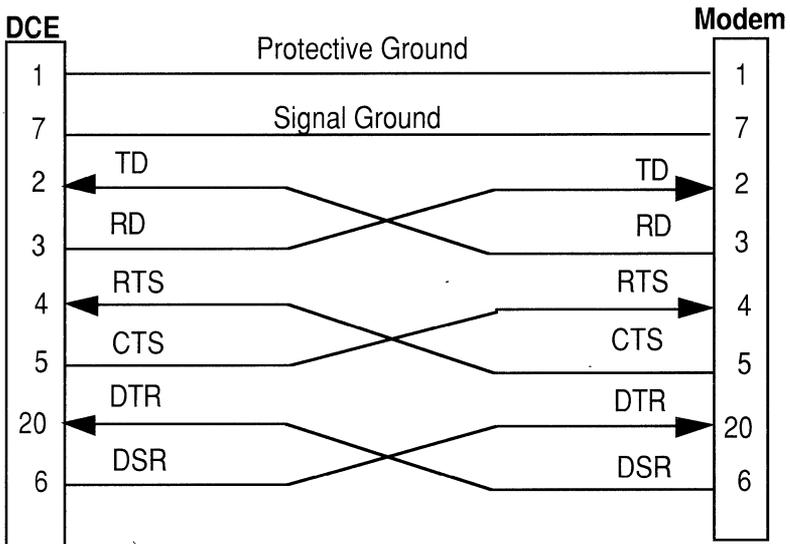


Figure B-2. Asynchronous Modified RS-232 Cable Diagram

Request to Send (RTS) and Clear to Send (CTS)

According to the RS-232 standard, the DTE asserts RTS on pin 4 when it has data to transmit. It then waits for the DCE to respond by asserting CTS on pin 5 before sending data to the DCE via the TD line. Depending on its register settings while operating in asynchronous mode, the modem uses RTS and CTS to implement hardware flow control between the DTE and the modem.

Data Terminal Ready (DTR) and Data Set Ready (DSR)

the DTE uses pin 20 (data terminal ready) to indicate its readiness to transmit or receive data. In automatic answer mode, DTR is activated in response to the ring indicator to tell the modem to answer the call. The DTR signal may

be turned on when the DTE is ready to transfer data over the interface or simply used to indicate that the DTE has been turned on.

You can configure the modem to interpret the DTR in different ways, thus allowing it to interface with a variety of DTE devices that may use DTR differently.

The modem uses pin 6 (data set ready) to indicate its readiness to transmit or receive data. Data set is another term for modem, typically used by the Bell Operating Companies.

Data Carrier Detected (DCD)

Although this signal line is actually named received line signal detector in the RS-232 standard, the term data carrier detected (DCD) is more commonly used. When pin 8 (data carrier detected) is active (DCD is on), the DTE recognizes that the modem has received a signal over the telephone network, which meets its criteria for an acceptable carrier signal.

Depending on the requirements of the DTE device, you can configure the modem to hold DCD on whether or not a carrier is detected or to turn DCD on only when an acceptable carrier signal is detected.

Ring Indicator (RI)

The modem uses pin 22 (ring indicator) to inform the DTE that the telephone is ringing. The RI signal goes on in cadence with the ringing signal on the telephone line. When the ringing voltage is present, RI is active. Between rings, RI is off.

You can configure the modem can be configured to answer an incoming call automatically or to answer the call only when the DTE indicates that it is ready to accept the call by turning DTR on.

Test Signals

Remote Digital Loopback

The local DTE uses pin 21 (remote digital loopback) to place the modem into remote digital loopback. The modem must be connected to a remote modem and must be in the data mode. When pin 21 is turned on, the modem requests that the remote modem loop back all data sent from the local modem. When pin 21 is turned off, the modem returns to the data mode.

Local Analog Loopback

The local DTE uses pin 18 (local analog loopback) to put the modem into local analog loopback. Ensure that the modem is offline and in the command mode. When pin 18 is turned on, the modem enters local analog loopback. All data received on the primary transmit data pin (pin 2) is modulated, demodulated, then looped back on the primary receive data pin (pin 3). When pin 18 is turned off, the modem returns to the offline condition.

Test Mode

Pin 25 (test mode) is a signal from the modem to the local DTE signifying that the modem is in a test mode. The test mode may be initiated either through the &T commands or the remote digital or local analog loopback RS-232 pins.

Rate Select Signals

DTE Signal Rate Select

The local DTE uses pin 23 (DTE signal rate select) to select between a primary signaling rate and the fallback rate. The only modulation modes that use pin 23 are

V.32*bis* (14,400 bps with 12,000 fallback), V.32 (9600 bps with 4800 bps fallback), and V.22*bis* (2400 bps with 1200 bps fallback). Pin 23 is enabled by setting S90=1 (for V.22*bis*, B0 must also be set). If pin 23 is on before a connection is completed, the WorldBlazer attempts to connect only at the primary rate.

If pin 23 is off, the modem attempts only the fallback rate. If this pin is not driven by the local DTE, it assumes the on condition.

DCE Signal Rate Select

Pin 12 (DCE signal rate select) is generated by the modem to inform the local DTE of the current connection rate. The only modulation modes that use pin 12 are V.32*bis* (14,400 bps with 12,000 bps fallback), V.32 (9600 bps with 4800 bps fallback), and V.22*bis* (2400 bps with 1200 bps fallback). When pin 12 is on, the modems connect at the primary rate. When pin 12 is off, the modems connect at the fallback rate.

RS-232 Timing Interchange Signals

When operating in one of the synchronous modes, the modem uses the RS-232 timing signals in addition to the primary interchange signals described previously. Figure B-3 shows the recommended cable configuration for connecting the modem to a synchronous device.

The timing interchange signals that the modem uses in synchronous modes are described in the following sections.

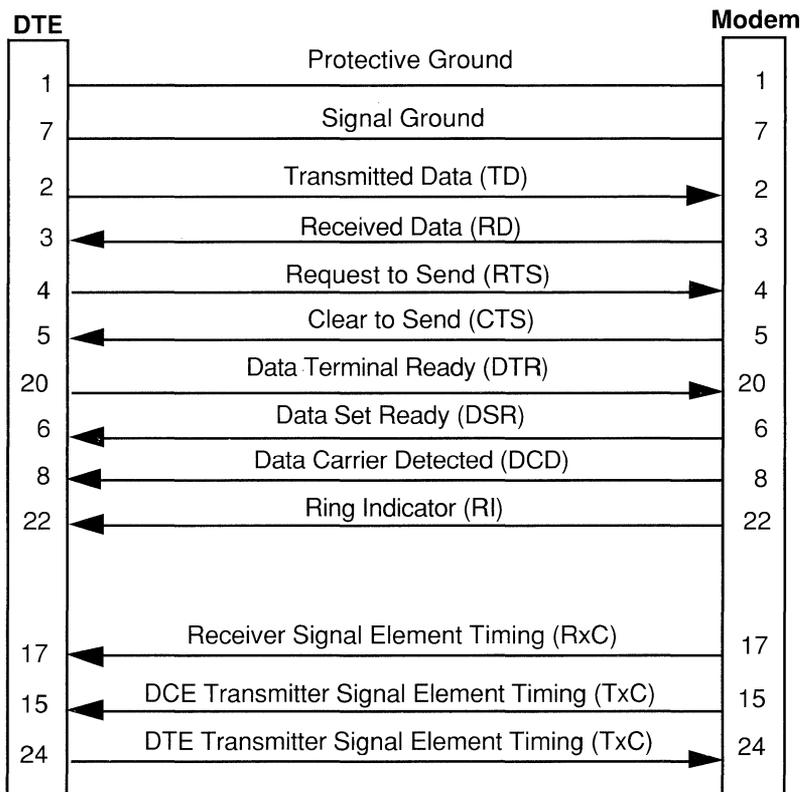


Figure B-3. Synchronous RS-232 Cable Diagram

Receiver Signal Element Timing (RxC)

The modem uses pin 17 (receiver signal element timing) to provide the local DTE with received signal element timing information. The transition from an on-to-off condition indicates the center of each signal element on the received data (RD) signal line.

Transmitter Signal Element Timing (TxC)

The modem can be configured to either provide the transmitter signal element timing signal to the DTE using pin 15 or accept the transmitter signal element timing signal from the DTE via pin 24.

The `&X` command determines which transmit clock is used. The default setting for this command is to use the DCE transmit clock (pin 15) to control the timing of the DTE's transmissions.

An on-to-off transition on pin 15 (DTE transmitter signal element timing) indicates the center of each signal element that is sent over the transmitted data (TD) signal line.

When connecting the modem to private or leased lines, the modem output power level can be adjusted by changing a plug-in resistor on the modem board shown in Figure C-1. Table C-1 lists the resistor values that correspond to various output power levels.

Table C-1. Internal Resistor (R32) Values

Power Limit (dBm)	Resistor (1%)
0	7.50K
-2	8.45K
-3	9.31K
-4	10.5K
-5	11.8K
-6	13.3K
-7	14.7K
-8	16.5K
-9	18.7K
-10	21.0K
-11	23.7K
-12	26.7K
-13	29.4K
-14	33.2K
-15	37.4K

For leased-line applications, configure the modems as shown in Table C-2.

Table C-2. Leased-Line Modem Configuration

Originate Modem	Answer Modem
S7=255	S7=255
S50=7	S50=7
S0=0	S0=1
&L1	&L1
S94=0	S94=0

This configuration allows the modems to attempt a V.32*bis* connection. If the user disconnects the call (by entering the H or Z command, pressing the T/D switch, or dropping DTR) or aborts the call before the connection is complete, the modem does not attempt to reestablish the connection.

You can enter leased-line operation by using the following procedure. First, enter the configuration you want from Table C-2 and save the setting to nonvolatile memory by using the &W command. Then turn the modem off and on to initiate automatic call establishment.

For additional information, refer to Chapter 3, AT Command Descriptions, in the reference manual for complete descriptions of the commands used in the Telebit Extended AT command set. Refer to Chapter 4, AT Register Descriptions, in the reference manual for complete descriptions of the registers used in the Telebit Extended AT command set.

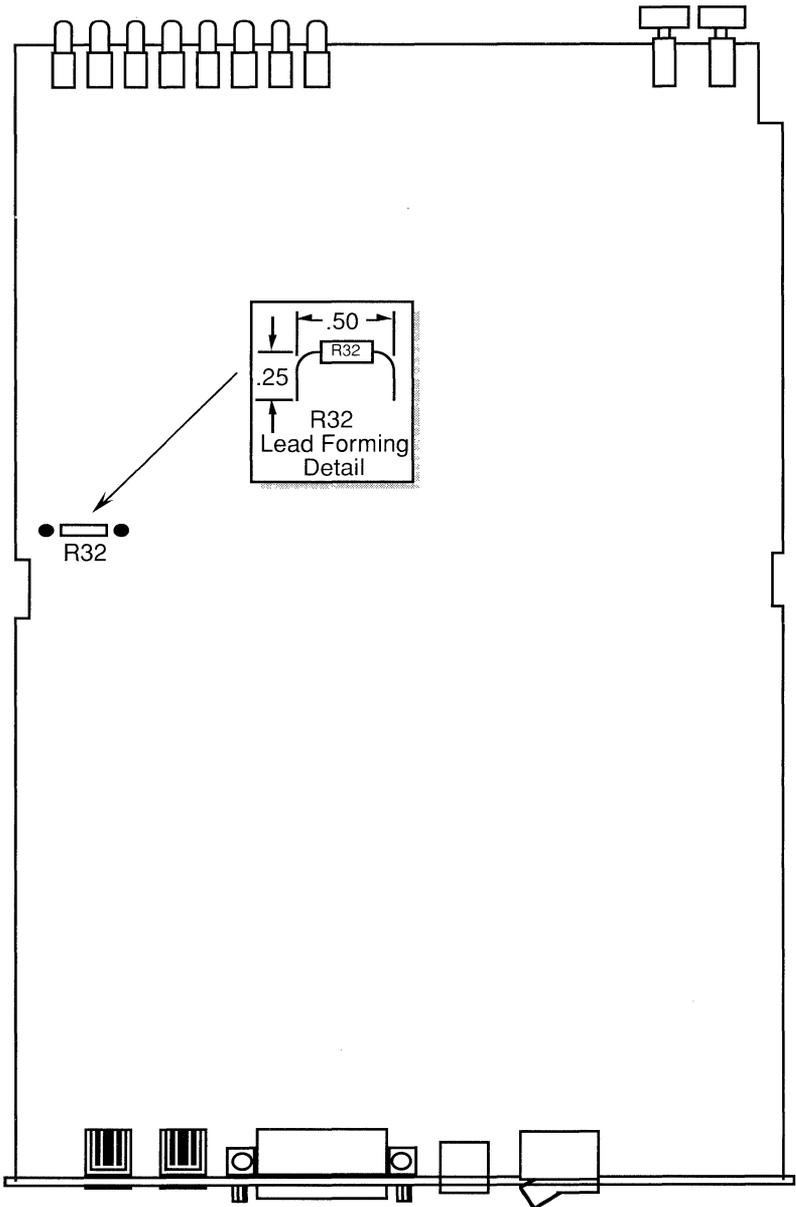


Figure C-1. Resistor R32.

Technical Specifications

D

Environmental Limits

Operating Temperature	50 to 120° Fahrenheit 10 to 50° Celsius
Storage Temperature	-40 to 149° Fahrenheit -40 to 65° Celsius
Relative Humidity	5 to 95% noncondensing
Altitude (maximum)	20,000 feet (6,096 meters)

Power Requirements

60 Hz Operation	115 VAC (+10%/-15%) @ 0.5 amps maximum
50 Hz Operation	230 VAC (+10%/-15%) @ 0.25 amps maximum

Physical Dimensions

Height	2.4 inches (6.1 cm)
Width	8.5 inches (21.6 cm)
Depth	13.0 inches (33.0 cm)
Weight	2.8 pounds (1.27 Kg)

Interface

Serial Port	25-pin RS-232D
Phone Line	6-pin RJ11C

Operation

Asynchronous or synchronous binary

Transmission Modes

Bell 103 or V.21 (300 bps)
Bell 212A or V.22 (1200 bps)
V.22*bis* (2400 bps)
V.23 (1200/75 bps)
V.32 (9600, 4800 bps)
V.32*bis* (14,400, 12,000, 9600, 7200 bps)
TurboPEP (up to 23,000 bps)

Standard Character Format

1 start bit, 8 data bits, 1 stop bit, or
1 start bit, 7 data bits, 1 parity bit, 1 stop bit

Modulation

FSK (Bell 103, V.21, V.23)
DPSK (Bell 212A, V.22)
QAM (V.23*bis*, V.32, V.32*bis*)
Trellis coded multicarrier QAM
(TurboPEP)

Receiver Sensitivity

-43 dBm

Certifications

FCC Part 15J Class A, part 68
ER95W5-17716-MD-E
DOC CS-03, Issue 05
CSA #LR66104-7
UL#E104318 (S)



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