

File Transfer

User's Guide

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Introduction

TRANSFER is the WinPrism program module that allows you to transfer data between Ashtech receivers and the computer.

You may run Transfer from within WinPrism by clicking on the TRANSFER button in the main menu. To run only the TRANSFER module click the start button and select transfer under the Programs/Prism for Windows pop up menu.

The main TRANSFER window consists of:

- Title bar—Prism for Windows with Minimize button and System menu button
- Top status area—WinPrism: TRANSFER Menu
- Directory button and current path line
- Working area with options icons
- TRANSFER control buttons: DOS and QUIT
- Bottom status area with information about Receiver type, Disk space, Port and Baud rate



Figure 1.1: TRANSFER Screen

Table 1.1 describes the TRANSFER Control buttons.

Table 1.1: TRANSFER Control Buttons

Button	Description
DOS	Takes you to DOS. Typing EXIT<ENTER> at the DOS prompt returns you to WinPrism. Shortcut key for this button is <Alt+O>.
Quit	Returns you to WinPrism Main window. Shortcut key for this button is <Alt+Q>
Directory Button	<p>If you want the files resulting from one of the TRANSFER functions to be stored in a specific directory, you can change the current directory before you select this function using the Directory button. In this case you will invoke the dialog box represented in Figure 1.2.</p> <p>To select the directory:</p> <p>Select the drive by double clicking the disk drive from the list box of existing drives.</p> <p>Select the desired directory by double clicking it from the list box of directories.</p> <p>Press Accept to accept the changes made and to return to TRANSFER window.</p> <p>Press Cancel to remove the dialog box without any changes made.</p>



Figure 1.2: WinPrism Directory

Options

Table 1.2 describes the options you may choose for TRANSFER.

Table 1.2: TRANSFER Options

Option	Description
Setup	Allows you to change a number of communication and receiver parameters. Shortcut key for this option is <Alt+S>.
Remote	Provides the capability of setting receiver parameters or checking receiver status via the serial port. Remote is also used when operating a receiver via a modem. Shortcut key for this option is <Alt+R>.
Download	Allows you to transfer files from the receiver's memory to the PC, along with other ancillary functions. Shortcut key for this option is <Alt+W>.
Logger	Allows you to log raw ephemeris and satellite data directly onto a computer's hard drive in real time - the B, E, and S-files are created on the PC rather than in the receiver's external memory. When using the Ashtech G-12, or GG24 receiver, Logger will also create almanac files and ionosphere files. The shortcut for this option is <ALT-L>.
Waypoint	Offers a convenient means of uploading, editing and storing waypoint files. Shortcut key for this option is <Alt+P>.

All TRANSFER options can be executed by clicking the corresponding icon or by pressing the corresponding shortcut key combination (for all TRANSFER buttons shortcut key combinations are <Alt+ underlined letter>).



You can navigate through control, directory and options buttons from the keyboard using the TAB key.

Setup

This option allows you to set communication parameters and command parameters used by other TRANSFER functions.

Selecting the SETUP icon brings up the following window consisting of:

- Title bar—Prism for Windows with Minimize button and System menu button
- Top status area—Prism—TRANSFER: Setup menu
- Directory and current path line
- Working area with parameters controls
- SETUP control buttons: ACCEPT and CANCEL
- Bottom status area with information about Disk space



Figure 1.3: Setup Screen

Parameter Controls

The Parameter controls allow you to set options for the TRANSFER functions. The communications parameters apply to all TRANSFER functions. The Logger and Remote parameters apply only to those functions. For the communication parameters, an asterisk (*) or an X indicates that the option is enabled. These parameters are enabled or disabled by clicking the right mouse button in the bracket of the desired parameter. Tables 2.3 through 2.5 describes the parameter options.

Table 1.3: Communication Parameters

Parameter	Description
COMM PORT	Sets the computers serial port to be used with TRANSFER functions. Position the arrow pointer on COM1 or COM2 and click the right mouse button to enable either COM2 (factory default) or COM1.
BAUD RATE	Sets the receiver's baud rate that will be used during TRANSFER functions. Use the right mouse button to choose the desired baud rate. Use the scroll bar to shift the list up and down. The chosen speed is marked with an asterick (*).

Table 1.3: Communication Parameters (continued)

Parameter	Description
RS-232 STATUS	The RS-232 status determines if the program must achieve a full handshake with the receiver to establish communication. When the IGNORE is enabled, the program will communicate without feedback from the receiver. Default is "X".

Table 1.4: REMOTE Parameters

Parameter	Description
AUTO CALL	This function is for the automatic call and download of receiver data, and serves as a master switch for all other REMOTE parameters. When enabled, REMOTE will access the file PHONENUM.LST and use the number entered in the adjacent field to access the phone number in PHONENUM.LST and call via the modem.
DOWNLOAD OLD	Enabling this option will cause REMOTE to automatically download files older than the number of hours set in the adjacent box.
DELETE AFTER	When enabled, REMOTE will automatically delete from the receiver memory any file older than the number of hours set in the adjacent box after first downloading these files.
CREATE BATCH	When enabled, REMOTE will create an executable batch file that converts the downloaded receiver image files to survey data files (B-, E-, and S-files). Enter the batch file name to be created in the adjacent box. the batch file calls the HOSE program with the -r option to convert the downloaded receiver image file (R-File) into survey files. You can run the batch file from the DOS prompt.
ERROR DELETE	When enabled, REMOTE deletes the output files if there is an error during the auto-download.
DOWNL. FILES BETW	When enabled, REMOTE will download any files that fall between the dates displayed in the adjacent boxes. The format of the date is year, day of the year, hours, and minutes.
DEL. FILES BETW	When enabled, REMOTE will delete any files that fall between the dates displayed in the adjacent boxes. The format of the date is year, day of the year, hours and minutes.
BEGIN DAY IN NAME	When enabled, REMOTE will put the day of the year that the file was opened into the file name.
AUTO BAUD RATE	When enabled, REMOTE will change the modem of the remote receiver to match the baud rate at the base.
DIRECTORY	When enabled, REMOTE will use the directory entered in the adjacent box to store downloaded files.



All remote parameters are operative only when the receiver is connected to a modem. Also, AUTO CALL must be enabled for any of the other parameters to function.

Table 1.5: Logger Parameters

Parameter	Description
Recording Interval	The rate at which you wish data to be recorded. Enter the value in seconds indicating desired interval between epochs.
Min Sats	Enter a value for the minimum number of satellites required for an epoch of data to be recorded. Epochs with less than this number of satellites will not be logged.
Elevation Mask	Satellites below this angle (measured from the horizon upwards in degrees) will not be logged.
Site Name	Enter the 4 character site name that you wish to appear in the site name field in the B-files.
Local Time - GMT	Enter the difference in hours between the local time and GMT time.

The following SETUP Control buttons are available:

- CANCEL—closes the WinPrism -- TRANSFER: Setup menu window without any changes made to the settings.
- ACCEPT—accepts all the changes made to the setup settings and closes the window.



Communication and command parameters are controlled by clicking the *right* mouse button or by pressing the corresponding shortcut key combination. SETUP control buttons are selected by clicking the *left* mouse button or by pressing the corresponding shortcut key combination. It is possible to navigate through SETUP control buttons and communication and command parameters from the keyboard using the TAB key.

Download

DOWNLOAD is the function that allows the user to transfer files from the receiver to the computer. The DOWNLOAD function is enabled by clicking on the DOWNLOAD icon using the left mouse button or by pressing the <ALT-W> keys.

Before entering the DOWNLOAD option, be sure that:

1. the receiver is turned on
2. the receiver is connected to the PC serial port with a HOSE cable
3. the correct PC serial port and desired baud rate have been selected in the TRANSFER/SETUP screen.
4. the receiver contains external memory as DOWNLOAD will only work with receivers containing external memory. Receivers without external memory such as the G-12 or the SENSOR II will not work with DOWNLOAD.

Once selected, the program will attempt to establish communications with the receiver via the communication port and at the baud rate displayed on the bottom status area of the TRANSFER window.

As polling progresses the following message appears:



Figure 2.1: Download Polling Communication Rate

To terminate polling, click the ABORT button to return to the TRANSFER window without establishing communication with the receiver.

If TRANSFER detects a communication problem the following error message may appear:



Figure 2.2: Error message

To remove the message from the screen and to return to the TRANSFER window press the Continue button (<Alt+C >). For possible reasons of communication failure see the TROUBLESHOOTING section at the end of this manual.

At this point if DOWNLOAD detects that Z-Surveyor receiver is connected to the PC, the dedicated download module for that receiver will be launched. For information on how to download data from a Z-Surveyor, refer to “Downloading from a Z-Surveyor Receiver” on page 17. For all other receivers DOWNLOAD is as described below.

Download window

After communication is established the following Download window appears consisting of:

- Title bar—Prism for Windows with Minimize button and System menu button
- Top status area—Prism -- TRANSFER: Download
- Directory button and current path line
- Working area with Receiver’s File List

- DOWNLOAD control buttons: Names, Ant, Mets, Comment, Image, Almanac, Download, Reset, Delete, Photo, QUIT
- Bottom status area with information about Receiver type, Disk space, Port and Baud rate

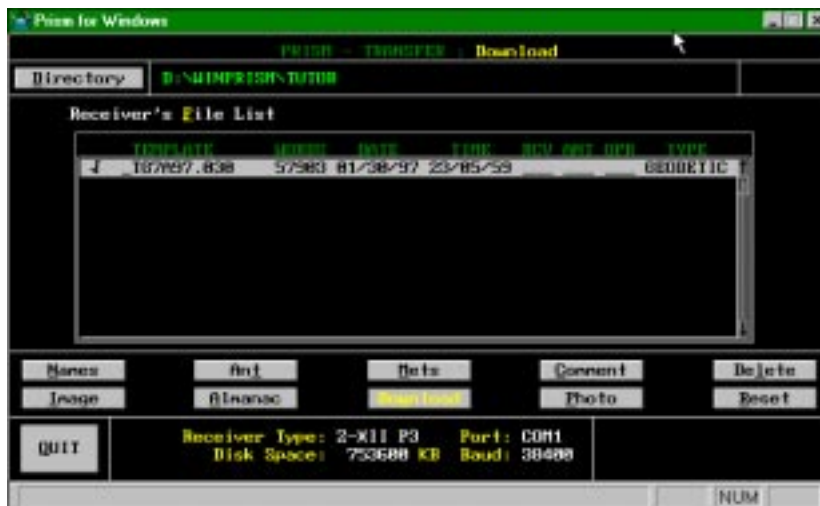


Figure 2.3: Download window

Directory

You may change the selected destination directory for downloaded files using the **Directory** button (shortcut key <Alt+D>).

To select the directory:

1. Select the drive by double clicking the disk drive from the list box of existing drives;
2. Select the desired directory by double clicking it from the list box of directories;
3. Press **Accept** to accept the changes made and to return to DOWNLOAD window.
4. Press **Cancel** to remove the dialog box without any changes made.

Receiver's File List

The Receiver's File List displays all the files currently in the receiver's memory. For each file, the screen displays the file name template, the size of the file in words, the date and time of the last recorded epoch, and the receiver serial number (RCV),

antenna serial number (ANT), the receiver operator (OPR), and the type of data in the file. The RCV, ANT, and OPR information reflects information that was entered when the file was collected.

Note that also that there is a check mark to the left of the template field for each file. This check mark is a tag, and any operations such as Download or Delete will be performed on all files that are tagged. To remove the tag from a particular file, use the right mouse button and click on the line of the file you wish to remove the tag from. The check mark will disappear.

Editing operations, such as ANT or NAME will be performed on the file that is highlighted. To highlight a particular file, click on the line of the file that you wish to edit. That file should now be highlighted.

If the list of files is long, use the scroll bar to locate the additional files.

Control buttons

The control button contains both editing and operation functions. Table 2.1 describes the DOWNLOAD control buttons.

Table 2.1. DOWNLOAD Control Buttons

Button	Description
Names	For the highlighted file, this button allows you to change the name of the files Win-Prism creates during the download. See “Names” on page 11. for more information.
Ant	For the highlighted file, allows you to change the antenna height measured before and after the session. See “ANT” on page 13. for more information.
Mets	For the selected file, this button allows you to change the meteorological information. See “METS” on page 13. for more information.
Comment	For the selected file, this button allows you to change session information and to enter or edit the comment field. See “Comments” on page 15. for more information.
Image	Performs a download of the receiver’s internal memory contents into a single file called, RAMDUMP. See “Image” on page 15. for more information.
Almanac	Downloads a satellite almanac file from the receiver and writes it into the file ALMyy.ddd, where yy is the year and ddd is the day-of-year of the almanac.
Download	Downloads all tagged files from the receiver onto your PC’s hard drive.

Table 2.1. DOWNLOAD Control Buttons (continued)

Button	Description
Reset	Allows you to switch to another receiver without leaving the WinPrism/TRANSFER/Download window. While selecting Reset, you will be instructed to perform the following: Disable power supply on current receiver Disconnect it from PC Enable power to new receiver Connect RS-232 to new receiver Once you have completed the instructions, click Continue . The new receiver will be polled and if communication is established, you may download data from the new receiver.
Delete	Deletes all files tagged in the Receiver's File list, from the receiver's memory. You will be asked to confirm your intention.
Photo	Downloads photogrammetry data in the receiver as a photogrammetry file. See "Photo" on page 17. for more information.
Quit	Closes DOWNLOAD window and returns to TRANSFER window.

Names

Names will bring up a dialog box where you can edit the name of the files that is currently highlighted in the Receiver File List. All related files can be changed by editing the template, or files can be changed individually.

Figure 2.4 depicts the Names dialog box.



Figure 2.4: Names dialog

Table 2.2 describes the buttons of this dialog.

Table 2.2. Names dialog

Button	Description
Accept	Accepts the new names and removes the dialog box.
Cancel	Removes the dialog box without any changes made.

You can navigate through fields and buttons using the TAB key or the arrow keys.

ANT

ANT allows you to edit the antenna height of the file that is currently highlighted in the Receiver File List. Prudent field procedures are to measure the antenna height before and after a session to ensure antenna height accuracy.



Figure 2.5: Antenna Height Dialog Box

Click the field you want to change or use the arrow keys for this purpose and type the correct data.

Table 2.3 describes the buttons of the Antenna Height dialog box.

Table 2.3. Antenna Height Control Buttons

Button	Description
Accept	Accepts the new values and removes the dialog box.
Cancel	Removes the dialog box without any changes made.

You can navigate through fields and buttons using the TAB key, or the arrow keys.

METS

METS allows you to edit the meteorological information of the file that is currently highlighted in the Receiver's File List. The four types of meteorological data that can

be edited are the dry bulb temperature, the wet bulb temperature, the barometric pressure, and the humidity. The following dialog box will appear:



Figure 2.6: Meteorological Information Dialog Box

Select the desired field by clicking the mouse button on it or using the arrow keys, and then enter the correct data.

Table 2.4 describes the buttons of this dialog box.

Table 2.4. Meteorological Information dialog

Buttons	Description
Before/After	You may enter two sets of meteorological data per session; one for the start and one for the end. This button allows you to toggle between the two sets and edit values as desired.
Accept	Accepts the new values and closes the dialog box.
Cancel	Close the dialog box without any changes made.

Comments

Comment allows you to edit various session information parameters. The parameters you can edit are receiver #, antenna #, operator initials, and an 8 character comment field.



Figure 2.7: Comment dialog

Click the field you want to change or use the arrow keys and type the desired data. Table 2.5 describes the buttons of this dialog.

Table 2.5. Comment dialog

Button	Description
Accept	Accepts the new values and removes the dialog box.
Cancel	Removes the dialog box without any changes made.

Image

This button allows you to download the receiver's internal memory contents into a single file, RAMDUMP, on the computer. Once downloaded, the individual data files can be extracted using the program HOSE.exe with a -r command line parameter. This option is used primarily if there is a problem in the receiver's memory that prevents normal downloading.

As the procedure of an image download progresses you will see typically:

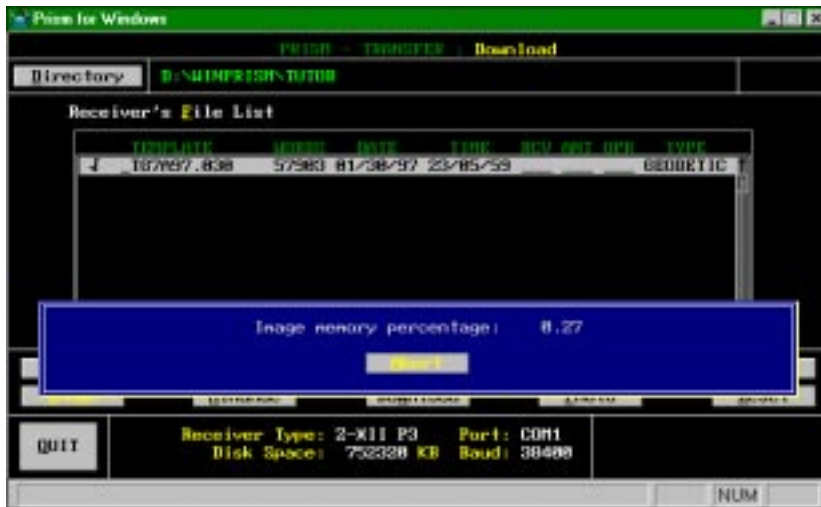


Figure 2.8: Image Memory Percentage dialog

You can terminate the procedure at any moment by clicking on the Abort button. The percentage count will increase until the image dump is completed. When the download finishes you return to the WinPrism -- TRANSFER: Download window. Selecting DOS, you will find the file RAMDUMP in the current directory.

Photo

Photo allows you to download any photogrammetry data in the receiver. Selecting this option will bring up the following dialog:



Figure 2.9: Photogrammetry dialog

You may change the default file name PHOTO.DAT by overwriting the name in the File field. A progress dialog will appear as the data are transferred. When the name is acceptable, click on the Accept button to start downloading.

Downloading from a Z-Surveyor Receiver

This section describes the tasks necessary to download and convert sessions, almanacs, and workday directories from a Z-Surveyor or Z-FX.

If download detects a Z-Surveyor is connected the following, dedicated, module will be launched.



Note that the PC and Receiver are already connected, so you may start the download procedure immediately. However, the communication setup is described here as well if you happen to encounter problems while in the module, so you can reconnect without going back to the main WinPrism Transfer Module.

Starting Download

Click on the Download icon from the Transfer menu. The main Download window opens (Figure 2.10).

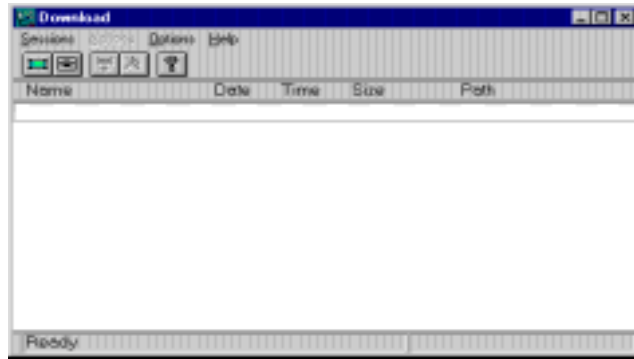


Figure 2.10: Main Download Window

Transferring Sessions

Transferring a session from the receiver to a PC requires two steps.

If transferring data directly from the receiver:

- connect to the receiver
- download and convert the sessions



You may also download sessions in one step and convert the files in a second step performed later. To download sessions and not convert them immediately, make sure you do not check Automatic Conversion in the Options menu.

When transferring sessions from a PCMCIA card:

- select the PCMCIA drive with the PCMCIA data card
- convert the sessions.

Transferring Sessions from the Receiver

You may transfer sessions directly from a receiver by one of two methods:

- Downloading and converting sessions in a continuous operation
- Downloading the sessions, then converting them

Almanac files, E-files, and C-files downloaded via the serial port are padded with null characters. These files, along with V-files, are incompatible with other Ashtech software unless converted. We recommend to always select the Autoconvert option.

You may wish to only download sessions if you are archiving copies of the sessions. The compression routines used by the Z-Surveyor receiver compacts sessions more efficiently than commercially available compression routines such as PKZIP. A V-file is not quite half the size of the expanded B-Files. V-files may be compressed further using PKZIP.

To download and convert sessions in a continuous operation:

1. Select **Open Receiver** from the **Sessions** menu. The **Comm Setup** window opens (Figure 2.11).

You must specify the source of the sessions using the **Open Receiver** or **Open Local Drive** option from the **Sessions** menu. Use the **Open Receiver** option to connect to the receiver and the **Open Local Drive** option if the sessions have already been downloaded but not yet converted, or if the sessions are on a local PCMCIA drive (See “Transferring Sessions from PCMCIA Card or Local Drive” on page 24).

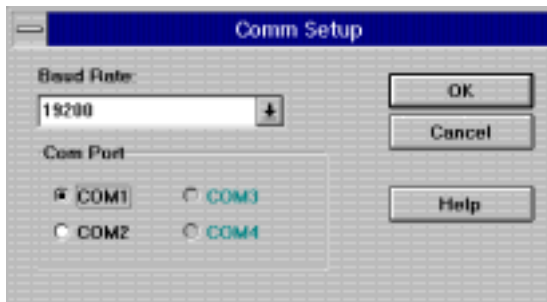


Figure 2.11: Comm Setup Window

2. Click the radio button corresponding to the port connected to the receiver.

Grayed out COM ports indicate that the port is unavailable.

3. Click the drop-down arrow to the right of the **Baud Rate** field and select the desired download baud rate from the list presented.

The default is 9600 baud. For a faster download, select the highest baud rate for your computer. **Download** automatically sets the receiver baud rate.



If a session does not download properly, exit and restart Download, and connect to the receiver at a lower baud rate.

4. Click **OK**.

Download closes the **COMM Setup** window and tries to connect to the receiver.



If Download can not connect to the receiver an error message appears (Figure 2.12). Click OK, check the receiver power and serial cable connections, and repeat steps 1 through 4.



Figure 2.12: Connection Error Message



If the receiver is outputting NMEA or RAW data messages from the serial port, Download can not connect to the receiver. Switch to a different receiver port or turn off all automatic messages (see the Z-Surveyor Operation and Reference Manual for more information).



The receiver stops recording data on the receiver memory card and closes the active file when Download connects to the receiver.

5. After successfully connecting to the receiver, the main **Download** window lists the almanac files and workday directories in the receiver. Double click on a work day or type [CTRL]+E to view the sessions within a workday directory (Figure 2.13).
6. Select the workday directories or sessions you wish to download.



To select multiple sessions, hold down the [CTRL] key while selecting sessions.

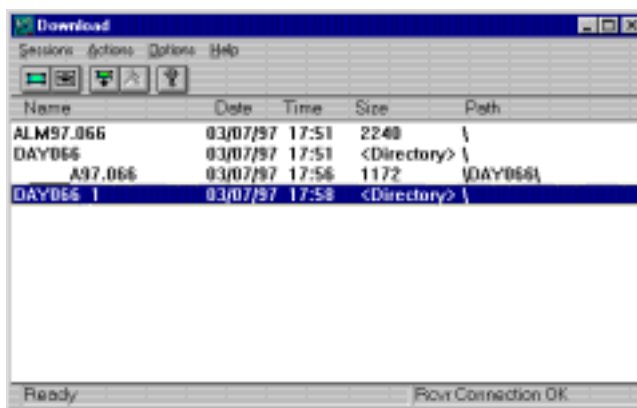


Figure 2.13: Main Download Window with Receiver Files

Table 2.6 describes the information presented in the Sessions listbox of the main Download Window.

Table 2.6. Information Listed in the Sessions Listbox


Item	Description
Name	Session, workday directory, or almanac file name. For the file naming convention, refer to “Names” on page 11.
Date and Time	The GMT date and time of the sessions, workday directories, or almanac files. The date and time listed for sessions is when the session closed. The date and time listed for workday directories and almanac files is when they were created.
Size	The size of the file in kilobytes. Once converted, the size of this file should approximately double.
Path	The directory path of the session, workday directory or almanac file. If a “\” or no path is listed, the session, workday directory, or almanac file is located in the root directory of the receiver or PCMCIA card.

7. Select **Automatic Conversion** from the **Options** menu.

A check mark next to **Automatic Conversion** indicates the option is selected. This option downloads and converts selected sessions in a continuous operation and is the default.



Almanac files, E-files, and C-files download via the serial port are padded with null characters. These files will be incompatible with other Ashtech software unless converted. We recommend to always select the Autoconvert option.

8. Select **Download** from the **Actions** menu, or click the **Download** button . The **Destination Directory** window opens (Figure 2.14).



Double-clicking a single session automatically downloads the session.



Figure 2.14: Destination Directory Window

9. Select the destination directory for sessions selected for transfer. The selected destination applies to all selected sessions.
If you type in a directory that doesn't exist, an error message appears asking if you wish to create the directory. Click **Yes** to create the directory, or **No** to cancel and return to the **Destination Directory** window.
10. Click **OK**.

Before downloading, **Download** checks for sufficient disk space. If **Download** cannot find enough disk space, a warning message appears indicating the problem and the download aborts. Click **OK** to return to the main window. Select sessions again for downloading and choose a destination directory with more available space.

Once **Download** determines enough disk space exists, the download process begins. The **Progress** dialog box opens showing the download progression (Figure 2.15).

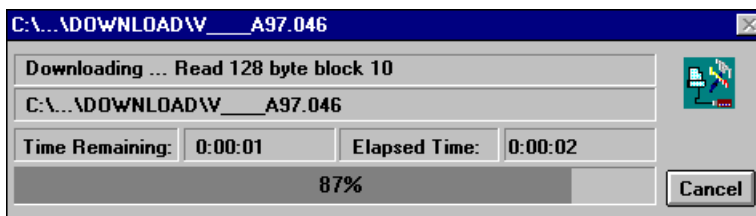


Figure 2.15: Download Progress Dialog Box

Upon completion of the downloading process, **Download** begins converting the sessions. The **Convert Data Progress** dialog box opens indicating the conversion progress has begun (Figure 2.16).

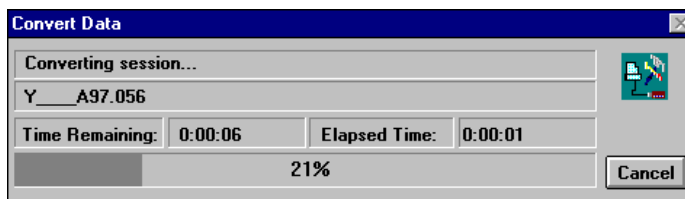


Figure 2.16: Convert Data Progress Dialog Box

At any point during the download or conversion, you can cancel the procedure by clicking **Cancel**. The **Operation Canceled** dialog box opens (Figure 2.17) indicating that the download or conversion has canceled.

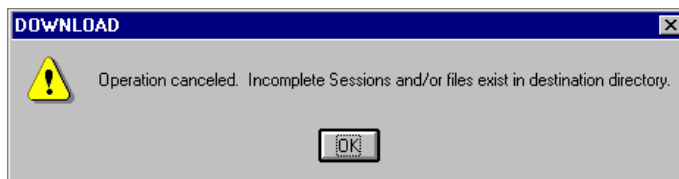


Figure 2.17: Operation Canceled Dialog Box



If you canceled a download or conversion, an incomplete session results which can not be imported into post-processing software. A session downloaded a second time overwrites the previous downloaded session in the destination directory. The Overwrite Existing Session dialog box opens asking if you wish to overwrite the session (Figure 2.18).

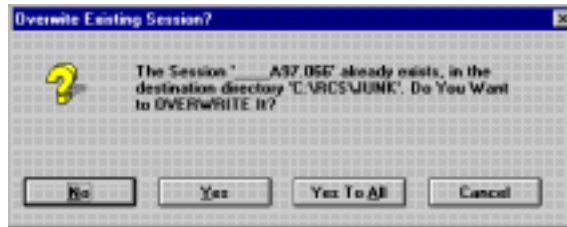


Figure 2.18: Overwrite Existing Session Dialog Box

Upon completion of the download and conversion, the **Convert Progress** dialog box closes returning to the main **Download** window.

Transferring Sessions from PCMCIA Card or Local Drive

Sessions transferred directly from a PCMCIA card need conversion. You may convert multiple sessions. Almanac files, E-files, and C-files transferred directly from a PCMCIA card do not need to be converted

To convert a file from a PCMCIA card or local drive:

1. Remove the PCMCIA card from the Z-Surveyor and place it in the PCMCIA drive of your computer.

2. After starting **Download**, select **Open Local Drive** from the **Sessions** menu. The **Source Drive and Directory** window opens (Figure 2.19).



Figure 2.19: Source Drive and Directory Window

3. Select the PCMCIA or local drive and directory where sessions are stored.



Actual sessions are not listed, only the directory structure.

The **Network** button opens the Microsoft Windows Network Connection window to connect to network drives.

4. Click **OK**.

The **Source Drive and Directory** window closes and the sessions available on the PCMCIA or local drive for conversion are listed in the main

Download window (Figure 2.20). Table 2.6 describes the information listed in the Sessions listbox of the main **Download** window.

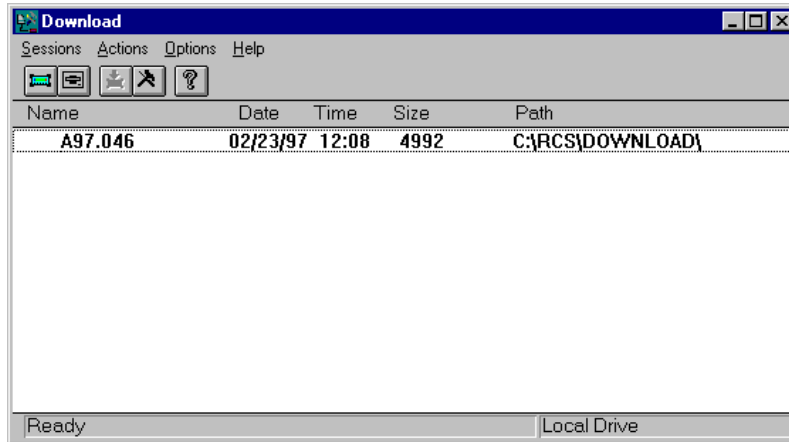


Figure 2.20: Main Download Window with Session


5. Select the sessions or workday directories you wish to convert.
To select multiple sessions, hold down the [CTRL] key while selecting sessions.
6. Select **Convert** from the **Action** menu, click the **Convert** button , or double click a session. The **Destination Directory** window opens (Figure 2.21).



Figure 2.21: Destination Directory Window

7. Select the destination directory for the converted sessions. The selected destination applies to all the selected sessions.

You may specify the PCMCIA drive as the destination directory as well as your hard drive.

If you type in a directory that doesn't exist, an error message appears asking if you wish to create the directory. Click **Yes** to create the directory, or **No** to cancel and return to the **Destination Directory** window.

8. Click **OK**.

Before converting, **Download** checks for sufficient disk space. If **Download** cannot find enough disk space, a warning message appears indicating the problem and the download aborts. Click **OK** to return to the main window.

Download begins the conversion process. The **Convert Data Process** dialog box opens indicating the conversion progress (Figure 2.22).

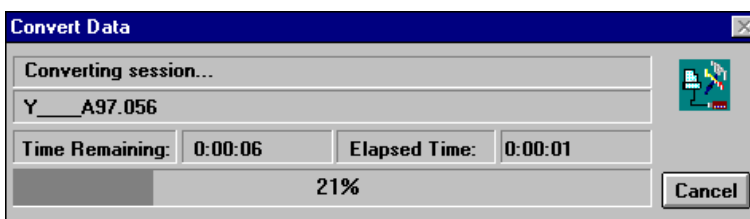


Figure 2.22: Convert Data Progress Dialog Box

At any point during the conversion, you can cancel the procedure by clicking **Cancel**. The **Operation Canceled** dialog box opens indicating that the conversion canceled (Figure 2.23).

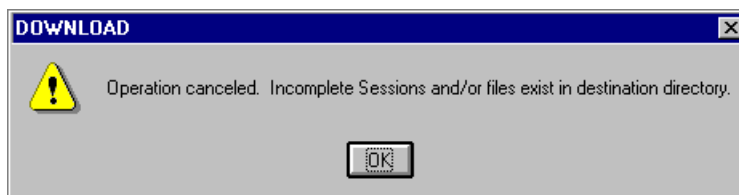


Figure 2.23: Operation Canceled Dialog Box



If the conversion is canceled, an incomplete session results which can not be imported into post-processing software. A session converted a second time overwrites the previous converted session in the destination directory.

Upon completion of the conversion, The **Convert Data Progress** dialog box closes returning to the main **Download** window.

Additional Features

Delete Sessions

You can delete sessions, workday directories or almanac files from a receiver no longer needed.

To delete a session or workday directory:

1. Connect to the receiver or PCMCIA drive to view the sessions and workday directories (Figure 2.24).

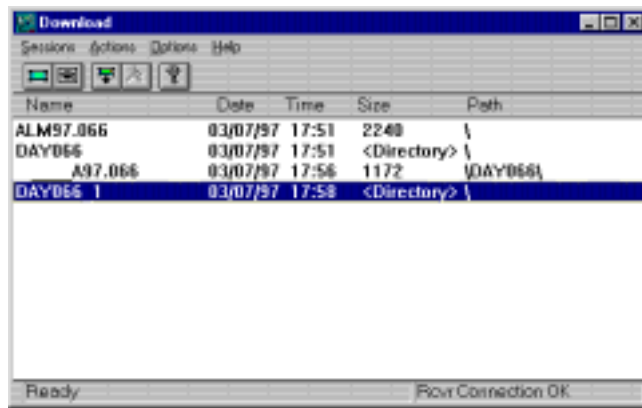


Figure 2.24: Main Download Window with Receiver Files

2. Select the sessions, almanac files, or workday directories you wish to delete. To select multiple files, hold down the [CTRL] key while selecting.
3. Select **Delete** from the **Action** menu. The **Confirm Session Delete** dialog box opens (Figure 2.25).

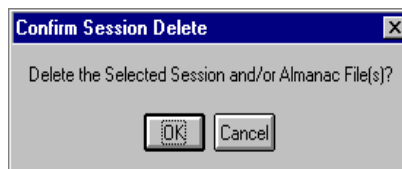


Figure 2.25: Confirm Session Delete Dialog Box

4. Click **OK**. The **Confirm Session Delete** dialog box closes and **Download** deletes the selected sessions, almanacs or workday directories.

Rename Sessions

A session on a receiver or local drive can be renamed so names are easier to remember or the session letters of the base and rover match. Workday directories and almanac files cannot be renamed.



Each session must be renamed individually.

To rename a session:

1. Connect to the receiver or local drive to view the sessions and workday directories (Figure 2.26).

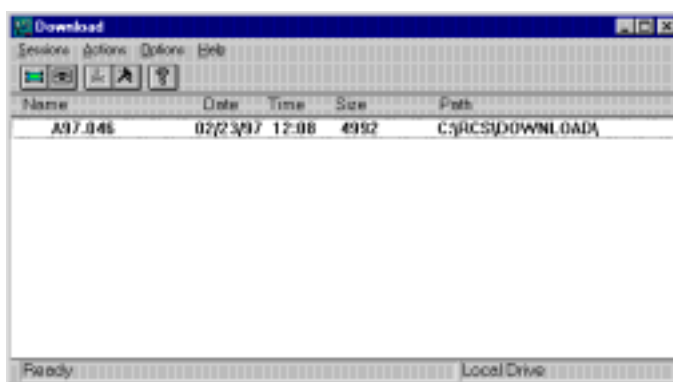


Figure 2.26: Main Download Window with Local Drive Files

2. Select the session you wish to rename.
3. Select **Rename** from the **Action** menu.

The **Rename Receiver Session** window opens (Figure 2.27).

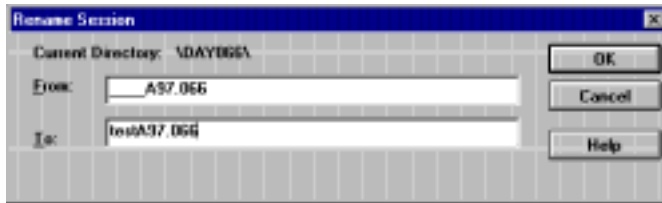


Figure 2.27: Rename Receiver Session Window

4. Type in the new name for the session, and click **OK**.

The new session name must be no longer than seven characters plus a three character extension. If the new session name is longer than seven plus three characters, an error dialog box opens informing you to reenter the new session name.

The **Rename Receiver Session** window closes and **Download** renames the selected file to the new file name. The main Download window updates with the new session name.

Using the On-Line Help

Any time you want to get on-line help while using **Download**, you can click on the **Help** menu for a list of topics. The on-line Help system is context sensitive, meaning you will first see topics related to what you were just doing or what windows are on your screen. You can then move to other explanations if you don't find what you want.

The on-line Help system is a point-and-click reference tool, with information about each entry field, dialog box, or listbox on each of the windows in **Download**. It also has brief explanations about the procedures involved in using each window.

To see reference information on any screen, press [**F1**]. Many screens have a **Help** button that directly opens the on-line Help system.

Menu Overview and Shortcut Keys

Figure 2.28 displays the **Download** main menu and Toolbar.



Figure 2.28: Download Main Menu

Table 2.7 describes each menu item with associated Toolbar buttons and shortcut keys.

Table 2.7. Shortcut Key Menu






Option	Description	Shortcut Key/Button
Sessions		
Open <u>R</u> eceiver...	Opens the Comm Setup window to connect a GPS receiver.	Ctrl+R 
Open <u>L</u> ocal Drive...	Opens the Source Drive and Directory window to connect to a local or PCMCIA drive.	Ctrl+D 
E <u>x</u> it	Quits Download.	N/A
Actions		
<u>D</u> ownload...	Downloads the selected sessions and workday directories. Available only when connected to a receiver.	Ctrl+D 
<u>C</u> onvert...	Converts the selected sessions and workday directories. Available only when connected to a local drive.	Ctrl+C 
<u>R</u> ename...	Renames selected session.	N/A
<u>D</u> elete	Deletes selects sessions, workday directories, or almanac files.	N/A
<u>E</u> xpand/Contract	Expands the selected workday directory to show files within the workday directory. If files are listed for a workday directory, file structure collapses to hide filenames within the workday directory.	Ctrl+E

Table 2.7. Shortcut Key Menu (continued)

Option	Description	Shortcut Key/Button
<u>O</u>ptions		
<u>A</u> utomatic Conversion	When selected, automatically converts sessions when downloaded.	N/A
<u>H</u>elp		
Search for Help On...	Displays a comprehensive index to information contained in the Help system	N/A
Contents	Open the on-line Help system.	F1 
About Download...	Displays information about Download	N/A

Logger

LOGGER allows you to collect raw data (B-files and E-files) directly onto your computer in real time. This function is most often used when there is either not enough memory in the receiver for the amount of data to be collected, or if you wish to collect raw data files from a receiver with no external memory. The LOGGER option is enabled by clicking on the LOGGER icon or by using the <ALT-L> keys.

Before entering LOGGER, be sure that:

1. the receiver is turned on and is connected to an antenna
2. the receiver is connected to the PC serial port with a HOSE cable
3. the desired communication and LOGGER parameters have been set in the TRANSFER/SETUP screen
4. the desired directory where the data files will be stored is displayed on the directory/path line at the top of the screen.

Once selected, the program will attempt to establish communication with the receiver via the communication port and at the baud are displayed on the bottom status area of the TRANSFER window. When communication has been established and parameters have been sent, the following screen is displayed.

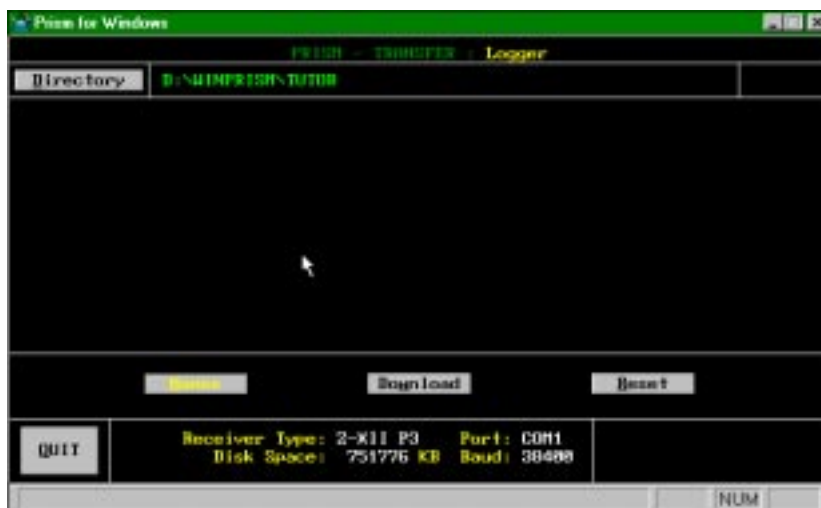


Figure 3.1: Logger window

Initially, the screen is empty, and there are 3 control buttons at the bottom of the screen. Table 3.1 describes the control buttons.

Table 3.1. LOGGER Control Buttons

Button	Description
Download	Initiates the data logging.
Names	An editable dialog appears in which you can enter the name of the B-file and E-file.
Reset	Allows you to switch to another receiver without leaving Logger screen.

To initiate data logging, click on the Download button. A logging status box appears showing the number of epochs collected, ephemeris messages received, number of SVs currently being tracked above the data elevation mask, and any lost epochs.

The data will be logged at the recording interval and elevation mask set in the Transfer screen.

The box also shows the name of the B-file and E-file being collected. The program initially uses the computer clock to determine the day of year used in the file names. This will be changed if necessary at the end of the data logging session.

To stop logging, press any key. The program will return to the TRANSFER/LOGGER window. Click on the QUIT button to return to the TRANSFER window.

Waypoint

The WAYPOINT option allows you to download, create, edit, and upload waypoint files. Waypoint will only work with receivers with the navigation option installed.

Before entering WAYPOINT, be sure that:

1. the receiver is turned on
2. the receiver is connected to the PC serial port with a HOSE cable
3. the desired communication parameters have been set in the TRANSFER/SETUP screen.
4. the desired directory where the waypoint files will be stored is displayed on the directory/path line at the top of the screen.

The WAYPOINT screen is entered by clicking on the WAYPOINT icon or using the <ALT-P> keys.

Figure 4.1 is an example of the Waypoint dialog.

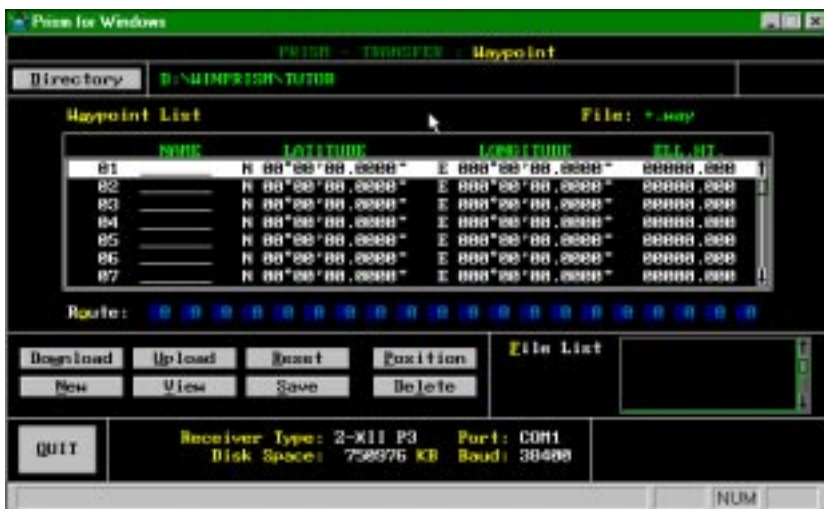


Figure 4.1: Waypoint Dialog Box

Table 4.1 describes the control buttons of the waypoint screen.

Table 4.1. Waypoint Control Buttons

Button	Description
Download	Downloads the waypoint file from the receiver into the Waypoint list and Route.
Upload	Used to upload the current waypoint file displayed on the computer into the receiver.
Reset	Allows you to switch to another receiver without leaving the Waypoint window.
Position	Choosing this button you can edit the point name and position data for the line highlighted in the Waypoint List. To highlight a line click the left mouse button on it. The position may be entered in either the geodetic or cartesian coordinate system.
New	Used to create a name of a new file. Type in the new filename in the appearing dialog box.
View	Used to view the tagged file selected in the Files List. If there is no file marked in the Files List, the message appears asking you to select file in the Files List..
Save	Used to save the file with the name written in the upper right corner of the window. If the file with the same name exists, the message appears asking you to confirm your intention to overwrite it. If there is no such file, the new file is created. Its name appears in the Files List.
Delete	Choosing this button you can delete data of the tagged waypoint line in the Waypoint List. Tagged line is marked with a checkmark. Waypoint List is a multiple selection list box, so you can select more than one line in this list box. To tag a line, click the <i>right</i> mouse button on it.
Quit	Closes the Waypoint window and returns to TRANSFER window.

Position Dialog Box

If you click on the position control button, the Position Dialog Box appears in the box, you can toggle between Geodetic and Cartesian in the display field to select the coordinate system of the waypoint position.

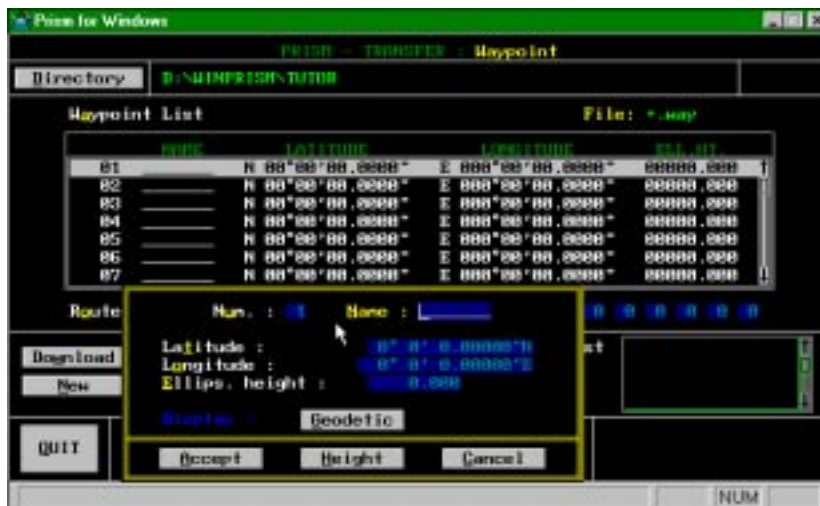


Figure 4.1: Position Dialog Box

Once the point name and position have been entered, click on Accept to enter that information on the screen.

Remote

REMOTE is a communication package for operating an Ashtech receiver remotely from a computer. There are multiple uses for REMOTE. As a simple serial communication package, REMOTE can control and monitor receiver operation by using the receivers serial port commands and responses. In addition, using either a modem or via direct serial port connection, the user can imitate receiver front panel controls and displays to obtain status information, set tracking parameters, and download and delete data files from the receiver. This manual describes the features of REMOTE, and explains how to set up the equipment. It assumes that you are familiar with Ashtech receiver operation and have the receiver manual available.

Receiver Compatibility

The functionality that can be accessed depends upon the type of receiver, and the options that are installed. All Ashtech receivers, regardless of option setting can use this program as a serial communication package. Z-12 receivers with the Remote Monitoring option installed can utilize all the functionality of this program. Z-Surveyors, and Z12 Sensors with the Remote Monitoring option installed can access all functions in this program except the File Processing screen (<ALT+F> screen) as the program cannot transfer files from a PCMCIA data card.

Input Files

At program start-up, REMOTE reads the files REMOTE.CNF and PHONENUM.LST from the directory in which REMOTE resides.

REMOTE.CNF

REMOTE.CNF contains the configuration that is set a program startup, including:

- Communication parameters (<ALT+C> screen)
- Translation parameters (<ALT+T> screen)
- Modem Setup parameters (<ALT+M> screen)
- Modem Response parameters (<ALT+M> <F5> screen)
- Screen attributes (<ALT+A> screen)

These parameters may be changed in the program but will not be saved in the REMOTE.CNF file until the <ALT+W> is pressed from the main window.

PHONENUM.LST

The file PHONENUM.LST is an ASCII file that contains the phone dialing directory and is organized as follows with three lines per phone entry:

Line 1: ENTRY NUMBER space ENTRY NAME

Line 2: 5 spaces PHONE NUMBER

Line 3: 5 spaces, BAUD, PARITY, DATABITS, STOPBITS,DUPLEX

You can change this file either through the REMOTE dialing screen (<ALT-D> screen) or through an ASCII editor. Changes will not be saved until you press W while the dialing screen is active.

Output Files

For receivers that can access the File Processing screen (<ALT-F> screen), a REMOTE.SUM file is created or appended to every time a file is downloaded or deleted from a receiver. Also, log files containing receiver data or responses may be created using the <ALT-L> screen.

System Setup

REMOTE requires that a communication link be established between the computer and the receiver. This link can be established with either a direct connect or a modem.

Direct Communication Link

For direct communication, connect one of the COM ports of the computer to one of the receiver serial ports using an RS-232 full-handshake null modem cable or cable adapter.

1. Turn the receiver on.
2. Click on the Remote icon from the File Transfer screen.
3. The program will take the initial communication parameters from the configuration file (REMOTE.CNF). If the communication parameters of REMOTE match the communication parameters in the receiver, then the program is now ready to control the receiver.
4. To change the communication parameters of the program to match the receiver, hit <ALT+C> keys from the main screen to enter the communication parameter menu. Select the correct parameters and press <F10> to accept the new parameters and return to the main screen. If the baud rate is the only parameter that is different between the receiver and the

software, then pressing <F10> will poll the receiver for the baud rate and automatically set the program to that rate.

5. To verify that communication is established, send the RID query to the receiver by typing:

\$PASHQ,RID <enter>

6. The receiver should respond with a \$PASHR response message.

Modem Communication Link

For modem communication, connect the power supply and the Phone and Line cables according to Manufacturers instructions. The program supports most Telebit modems and the US Robotics Sportster modem. Connect the receiver to the modem with the receiver modem cable, and connect the receiver to the computer with a serial port cable. Power on the receiver and the modem. Run the REMOTE.exe program, and verify that communication is established between the receiver and REMOTE by following the steps in the Direct Communication Link section.

The procedure for initializing the modem will vary depending upon the receiver type.

For receivers without a full screen display:

1. Enter the \$PASHS,MDM command. (see the receiver manual for the parameters of this command.)
2. Enter the \$PASHQ,MDM query to verify that you receive the correct response string and that the modem state is on.
3. Issue the \$PASHS,MDM,INI command to initialize the modem. You should receive and \$PASHR,ACK response followed by the response message \$PASHR,MDM,INI,OK*cc . (see the receiver for more information on this command.)
4. Send the \$PASHQ,MDM command to verify that you receive the correct response string and the modem state is INITOK.
5. Use \$PASHQ,RAW to verify that the baud rate for the port connected to the modem is correct.
6. In the <ALT-M> screen, select the modem type by toggling the <page-up>/<page-down> keys.

For receivers with a full screen display:

1. On the receiver go to screen 4 and move the cursor to highlight the field associated with the serial port being used (PORT A/B/C/D Setup) and press [e] to enter the port setup subscreen.

2. Move the cursor to highlight the BAUD RATE indicator and press the [+] or [-] key to toggle through the baud rates. Select the desired baud rate, and press [e] to save the setup and return to the main display of screen 4.
3. In screen 4, highlight the MODEM SETUP and press [e] to enter the modem setup subscreen.
4. Highlight PORT and toggle through the list and select the port connected to the modem.
5. Highlight TYPE and select the type of modem being used. Press [e] to save the changes and return to screen 4.
6. In screen 4, highlight SUBCOMMANDS and press [e] to go the subcommands subscreen. Enter the command 191. Return to the main screen.
7. Cycle the power of the receiver OFF and ON to initialize the modem with the required parameters. During initialization, verify that the message 'Modem Initialized' appears on the receiver screen.
8. In the REMOTE program press <ALT> + <M> to enter the Modem Parameters screen. Set the modem parameters according to the manufacturers specifications. While in the Modem Parameter screen, press <F5> to define the modem response string.
9. Press <F10> twice to save the changes and return to the main screen.
10. Press <ALT> +<I> to send the modem initialization string. Press <ALT>+<D> to dial a telephone number.

On the PC side:

With the modem connected to the phone line and to the PC, turn the the modem power on. Run REMOTE.

1. Enter the communication link command AT and verify that the response back is OK.
2. In the <ALT-M> screen, select the modem type by toggling the <page-up>/<page-down> keys.
3. In the <ALT-D> screen, select <A> and set up the baud rate of the modem and the phone number of the remote/receiver end.
4. To dial and connect to the remote unit, position the cursor on the entry tat you wish to dial and press <D>. Wait for the message stating that the connection was successful that will flash on the screen when communication is established.
5. Escape to the REMOTE main window and press <ALT-S> to verify that communication is established. Receiver status information should appear.

Program Operation

To execute REMOTE, at the DOS prompt type:

REMOTE <enter>

After the introduction screen that displays the program version number and release date, the main screen will appear. The main screen also is known as the chat window, and typically looks like:

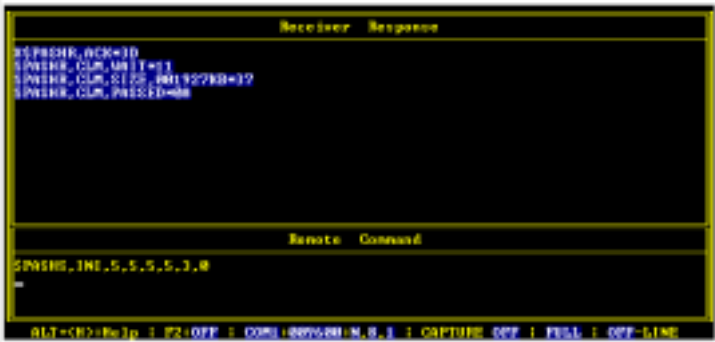


Figure 5.1: Main Window

From the main screen, you can begin to control the receiver if the program communication parameters are set to match the receiver. The program will take the initial communication parameters from the configuration file (REMOTE.CNF). These parameters are reflected in the Status Line at the bottom of the main screen. To change the communication parameters of the program to match the receiver, hit <ALT>+<C> keys from the main screen to enter the communication parameter menu. Select the correct parameters and press <F10> to accept the new parameters and return to the main screen. Pressing <F10> from the main screen will poll the baud rate and set the program baud rate to match the receiver. To verify that communication is established send the RID query to the receiver by typing the following command:

\$PASHQ,RID <enter>

The receiver should respond with a \$PASHR response message in the Receiver Response area of the main screen.

Status Line

At the bottom of most screens is the status line, typically:

ALT+<H> : Help | F2:OFF | COM1:009600:N,8,1 | CAPTURE OFF | FULL | ON-LINE

The fields are described in Table 5.1:

Table 5.1: Status Line Parameters

Field	Description
F2:OFF	character buffer
COM1	PC communication port selected
009600	Communication speed selected
N	Parity (N=none, O= odd, E=even)
8	Data bits (7 or 8)
1	Stop bits (1 or 2)
CAPTURE:OFF	File Capture Mode (<ALT-L> menu)
FULL	duplex (full or half)
ON-LINE	Connection with receiver (on-line or off-line)



The F2 button controls the character buffer. If this field is OFF, then REMOTE will queue in a buffer all characters that you type and will not send them to the receiver until you press <enter>. If this field is OFF, then each character is sent to the receiver as it is typed.

Remote Menus and Screens

All menus and screens are accessed by using the <ALT> + <key> format from the main window. These menus and screens are summarized in the Command Summary section and are described in detail following the summary.

Command Summary

The following is a list of the <Al>+<Key> commands.

- <ALT>+<A> From any display, accesses the display attribute editing window.
- <ALT>+<C> From the main menu, accesses the communication parameters menu.
- <ALT>+<D> From the main menu, accesses the dialing screen.
- <ALT>+<E> From the main menu, accesses the receiver parameter set.
- <ALT>+<F> From the main menu, accesses the receiver files screen.

- <ALT>+<H> From any display, accesses the help screen.
- <ALT>+<I> From the main menu, sends modem initialization string to the modem.
- <ALT>+<L> From the main menu, enables or disables the capture mode.
- <ALT>+<M> From the main menu, accesses the modem parameters menu.
- <ALT>+<O> From the main menu, accesses the Miscellaneous Parameters menu.
- <ALT>+<P> From the main menu, accesses the receiver parameters menu.
- <ALT>+<R> From main menu, accesses RTCM differential status and setup menu.
- <ALT>+<S> From main menu, accesses current receiver tracking status screen.
- <ALT>+<T> From the main menu, accesses the translation parameters menu.
- <ALT>+<W> writes a copy of current changes to all parameters in the configuration file REMOTE.CNF.
- <ALT>+<X> From the main menu, terminates REMOTE.EXE upon valid response to termination prompt
- <ALT>+<Z> From the main menu, starts the modem hangup sequence

Help Screen: <ALT>+<H>

From any window, access the Remote Command Menu by pressing <ALT>+<H>.

Remote Command Menu			
SET	UP	REMOTE DIRECT SETTING	COMMAND
Communication Parameter	ALT-C	Data Recoding Interval ...	\$PASHS,RCI,ddd
Modem Parameter ...	ALT-M	Set Port x To d(baud code)	\$PASHS,SPD,x,d
Transfer Parameters ...	ALT-O	Port x Output Type To str	\$PASHS,OUT,x,str
Transfer Parameter ...	ALT-T	Port x As Base, Dif. Mode	\$PASHS,DIF,BAS,x,d
Receiver Parameters ...	ALT-P	Remote & Dif.Mode d-Precision	\$PASHS,DIF,REM,d
Capture LOG. File Name	ALT-L	Turn Off Dif. Mode	\$PASHS,DIF,OFF
Write Configuration File	ALT-W	Port x NMEA str-ON/OFF	\$PASHS,NME,str,x,switch
Window Attributes ...	ALT-A	Pot x In RTCM, str-BAS/REM	\$PASHS,RTC,str,x
RTCM Setting & Display	ALT-R	Provide A Site Name As xxxx	\$PASHS,SIT,xxxx
COMMUNICATION WITH RECEIVER	Close Current File		\$PASHS,FIL,C
	Reset All Value To Defaults		\$PASHS,RST
REMOTE DIRECT QUERY COMMAND			
View Receiver Status ...	ALT-S		
Phone dial Up ...	ALT-D	Receiver ID ...	\$PASHS,RID
Initialize Modem ...	ALT-I	MBEN Structure In Binary ...	\$PASHS,MBN
Hang Modem ...	ALT-Z	PBEN Structure In Binary ...	\$PASHS,PBN
File Processing ...	ALT-F	SNAV Structure In Binary ...	\$PASHS,SNV
Exit the program	ALT-X	Port & Baud Rate Being Used ...	\$PASHS,PRT
ALT+<H> for Help COM2:019200:N,8,1 CAPTURE OFF FULL OFF-LINE			

PC0070

Figure 5.2: Remote Command Menu Screen

This help screen comprises 5 sections:

- **SETUP** lists commands associated with the setting of the communication parameters, modem parameters, transfer parameters, receiver parameters, capture mode, write configuration file, window attributes, and RTCM parameters.
- **COMMUNICATION WITH RECEIVER** lists commands associated with the receiver status, the modem communication process, file processing, and exiting REMOTE.EXE.
- **REMOTE DIRECT SETTING COMMAND** lists the most commonly used Ashtech "\$PASH"-format setting commands that allow users to set certain receiver parameters remotely through the computer serial port
- **REMOTE DIRECT QUERY COMMAND** lists the most commonly used Ashtech "\$PASH"-format query commands that allow users to request specific structure data from the receiver through the computer serial port.
- **STANDARD STATUS LINE** (previously described).

To close the Remote Command Menu screen, press <Esc>.

Communication Parameters Screen: <ALT>+<C>

From the REMOTE main window, access the Communication Parameters Pop-up menu (Figure 5.3) by pressing <ALT>+<C>.

Communication Parameters: COM2:019200:N,8,1 FULL Duplex						
COMM Port	BAUD	Rate	Parity	Data Bits	Stop Bits	Duplex
COM1	300		NONE	7	1	HALF
COM2	600		ODD	8	2	FULL
	1200		EVEN			
	2400					
	4800					
	9600					
	19200					
	38400					
	57600					
	115200					

<ENTER> - Chosen <F10> - Accept <Esc> - Abort

PC0072

Figure 5.3: Communication Parameters Pop-up Menu

The top line displays the current settings.

To change a parameter:

1. Highlight the item and press <ENTER>; each change is reflected in the top line
2. Once all changes have been made, press <F10> to invoke the changes and return to the main window, or press <Esc> to ignore any changes and return to the main window.



When communicating with an Ashtech receiver, you must select Parity NONE, Data Bits 8, and Stop Bits 1.

Translation Setup Screen: <ALT>+<T>

From the main window, access the translation parameters pop-up menu by pressing <ALT>+<T>. For the factory default parameters; observe:

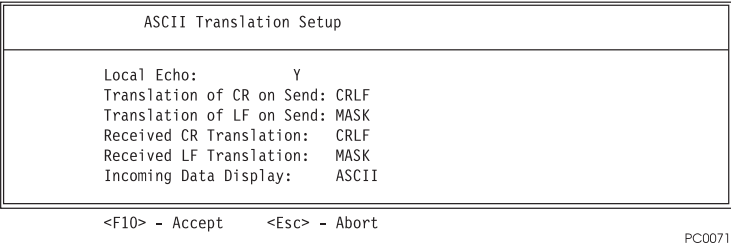


Figure 5.4: Translation Parameters Pop-Up Menu

This menu provides the data translation setup parameters during chat mode and has no effect during protocol transfers. The range of each parameter and their descriptions are listed below.

Table 5.2: Parameter Range and Description

Parameter	Range	Description
Local Echo	Y/N	With local echo set to "Y", each key pressed will be locally echoed to the display. If you see duplicated characters (ffoorr eexxaammpplle), the remote system is returning each character sent. For this case, set local echo to "N".
Translation of CR on Send Translation of LF on Send Received CR Translation Received LF Translation	CRLF/CR/LF/ MASK	These parameters perform a translation on the incoming and outgoing occurrences of the CR (carriage return) and LF (linefeed) characters. CRLF implies that the character will be translated to the CR and LF characters, CR implies translation to CR, LF implies translation to LF, and Mask implies that the character will be masked: that is, removed from the data stream.
Data Display	ASCII/DECI- MAL/HEX	Incoming data will be displayed in either ASCII, Decimal value of each character, or Hexadecimal value of each character.

- To change a parameter:
- Highlight the desired field and press <ENTER> until the desired setting is displayed.

Once all changes have been made, press <F10> to invoke the changes and return to the main window, or press <Esc> to ignore any changes and return to the main window.

Modem Parameters Screen: <ALT>+<M>

From the main window, access the modem parameters menu by pressing <ALT>+<M>. For the factory default parameters; observe:

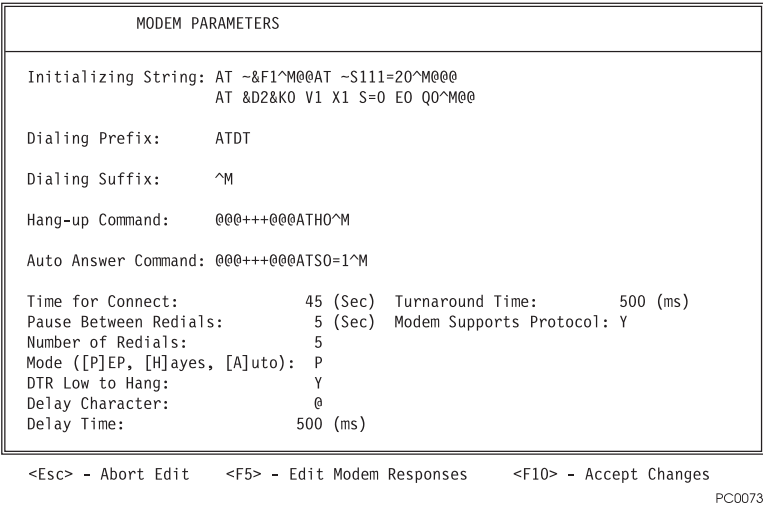


Figure 5.5: Modem Parameters Screen

- To change a parameter:
- Highlight the desired field and type the desired value.
 - Once all changes have been made, press <F10> to invoke the changes and return to the main window, or press <Esc> to ignore any changes and return to the main window.
 - This screen allows users to specify the parameters for control of computer modem. The top portion of the screen defines a set of strings to be sent to the

modem at various times (defined later in this section). These strings must follow the command structure defined by your modem manual.

- The special character ^ defines the character to be treated as control key. For example, ^M will be translated to <CTRL-M>. To obtain the ^ character itself as part of the command string, use ^^.

The parameters on this screen are defined as:

- **Initializing String** - defines the string of commands to be sent to your modem prior to each dial operation.
- **Dialing Prefix** - defines the string of commands to be sent just prior to the telephone number during dial operations.
- **Dialing Suffix** - defines the characters to be sent to the modem just after the telephone number for dialing.

For example, a Hayes®-compatible modem's dial string appears like this:

ATDT 524-1527 <ENTER>

In this case, the dialing prefix is "ATDT" and the dialing suffix should be "^M" (for <ENTER>).

- **Hang-up Command** - defines the characters used to hang the modem up, that is, place the receiver on-hook.
- **Auto Answer Command** - defines the characters used to place the modem in auto-answer mode.
- **Time for Connect** - defines how long the program should wait for the remote system to respond: the timer starts after the dial suffix is sent. If no carrier is detected within the defined time, REMOTE assumes no connect is made and increments the dial retry count by one.
- **Turnaround Time** - defines the time required to command an Ashtech receiver and receive its response. This parameter can be phone line and/or modem specific. For example, if your modem utilizes a special exchange protocol to optimize large data bursts but delays for short bursts, the time required from issuing a command to the remote (for example, obtaining Ashtech receiver status, parameter, and FAT data) and obtaining the response can increase. This parameter specifies a timeout criterion before REMOTE assumes that the remote system did not obtain the command correctly. Some suggested nominal times are: 200 milliseconds for modems communicating via X.32 or X.42 protocols; 600-800 milliseconds for modems using the PEP protocol.
- **Pause Between Redials** - defines the delay time between two consecutive attempts to dial and connect to a remote system.
- **Modem Supports Protocol** - *<not implemented in this release>* indicates that the modem has been configured to support a protocol transfer. Some modems gain transfer speed through this support but tend to queue large amounts of data. When terminating a protocol transfer, however, these

modems do not immediately terminate the transfer when the termination request is sent. They still need to dequeue the data that has been stored. Thus, REMOTE.EXE needs to know if this data needs to be dequeued when terminations occur. Specifying Y for this parameter will accomplish this.

- **Number of Redials** - Defines the maximum number of attempts to dial and connect to a remote system before terminating a dial sequence.
- **Mode** (<P>EP, <H>ayes, <A>uto) - <not implemented in this release>
- **DTR Low to Hang** - (Specify y or n). When y is specified, REMOTE drops DTR for approximately 500 milliseconds when disconnecting a remote system.
- **Delay Character** - Specifies which character in the modem control strings should be translated into a delay. The delay is defined by the parameter DELAY TIME. The specified character is translated into a pause and the actual character is not sent. For example, in the hang-up command string shown above, there are six "@" characters, which will be translated into a pause. With a delay time of 500 milliseconds (ms), the following will transpire when the modem hang-up command is sent:
 - 3 consecutive pauses of 500 ms (1.5-second delay)
 - +++ is sent to the modem via the COM port
 - 3 consecutive pauses of 500 ms (1.5-second delay)
 - ATH0 <ENTER> is sent to the modem.
- **Delay time** - defines the amount to delay (in milliseconds) for each delay character found in a modem string.

Modem Response Strings Screen: <ALT>+<M>, <F5>

To access the modem response menu, press <F5> while the modem parameters menu is still active; observe:

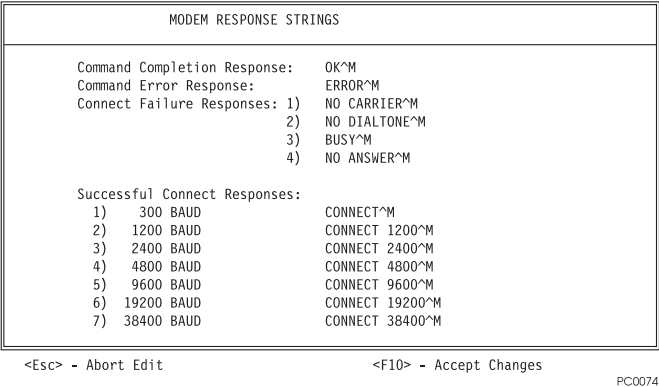


Figure 5.6: Modem Response Menu Screen

To change a parameter:

- Highlight the desired field, and type the desired value.
- Once all changes have been made, press <F10> to invoke the changes and return to the Modem Parameters screen, or press <Esc> to ignore any changes and return to the Modem Parameters screen.
- To return to the main window, press <Esc> again.

During REMOTE operation, the modem may return response codes as a result of a command. These messages help REMOTE determine the status of the communication link. For example, sometimes when dialing a remote system, the remote system may already be handling a call. Some modems will indicate (with a response message) that the remote is indeed busy; therefore, no connection could be established. (These response codes should be documented in your modem operator's manual.) The definitions used by REMOTE are:\

- **Command Completion Response** - *<not implemented in this release>*
- **Command Error Response** - REMOTE looks for the error response when initializing the modem (that is, when sending the modem initialization string).
- **Connect Failure Responses/ Successful Connect Responses** - REMOTE looks for both the connect failure and successful connect responses while dialing a remote system. Upon unsuccessful connect, the former responses

should be returned. The successful responses are used to set the computer port speed equivalent to the phone link speed. Therefore, these responses must be different for each communication speed.

- **Setup/Write Configuration File, <ALT>+<W> Command** -REMOTE maintains a run-time copy of all parameters stored in the configuration file REMOTE.CNF (described in the section Input Files Used by REMOTE). <ALT>+<W> allows you to save to REMOTE.CNF any changes made to these parameter settings. REMOTE uses the new values each time it runs until you change them again.

To restore the factory default parameter values:

- Rename REMOTE.CNF or delete REMOTE.CNF from the directory containing REMOTE.
- The next REMOTE runs, it automatically generates REMOTE.CNF containing the default parameters.
- To save any changes made to the current settings, press <ALT>+<W> from the main window.
- As REMOTE saves the settings, observe the message: writing configuration file

The settings saved comprise:

- Setup/Transfer Parameter: ASCII Translation Setup Screen, <ALT>+<T> Command
- Setup/Modem Parameter: Modem Parameters Screen, <ALT>+<M> Command
- Setup/Modem Parameter: Modem Response Strings Screen, <ALT>+<M>, <F5> Commands
- Setup/Transfer Parameters: Miscellaneous Parameters Screen, <ALT>+<O> Command
- Setup/Window Attributes, <ALT>+<A> Command, display attributes associated with each screen.

Dialing Screen: <ALT>+<D>

From the main window, access the dialing screen by pressing <ALT>+<D>; observe, typically:

	NAME	NUMBER	BAUD	P	D	S	Dup
1	Ashtech BBS-19200	408-524-1527	19200	N	8	1	F
2	Another BBS	987-641-3210	19200	N	8	1	F

<E> - Edit Entry

<D> - Dial Entry

<A> - Add Entry

 - Delete Entry

<W> - Write List

<F10> - Done

PC0076

Figure 5.7: Dialing Screen

This screen displays the telephone numbers contained in the file PHONENUM.LST. The left column contains the entry number for automatic dialing.

Dialing a Number. In the dialing screen, to dial an entry, highlight the entry and press <D>. REMOTE then starts dialing by first setting the communication parameters associated with the selected entry, initializing the modem using the modem control strings (explained in the section Modem Parameters), and displaying the message:

Initializing Modem

and then sending to the modem the dialing string which includes the dialing prefix, phone number, and dialing suffix.

During this process, a pop-up screen appears for the selected entry; for example:

Dialing: Ashtech BBS-19200
Number: 524-1527
Wait Time: 0
Redials: 0

PC0077

Figure 5.8: Dialing Pop-Up Screen

Once the dialing string has been sent, the Wait Time timer is started. If the remote system fails to respond properly or the call does not connect within the time specified via the Time for Connect parameter in the Modem Parameters Menu, the call is terminated and the Redials counter is incremented. The call sequence is re-initiated if

the number of redials has not exceeded the Number of Redials parameter in the Modem Parameters Menu.

To terminate the dialing sequence in process at any time, press any key, and respond to the termination request prompt:

<C>ontinue dial or <Q>uit?

Once the modem has established a connection, REMOTE again displays the main window.

Editing a Dialing Entry.

In the dialing screen, to edit an entry, highlight the entry and press Enter <e>; observe the pop-up editing screen, typically:

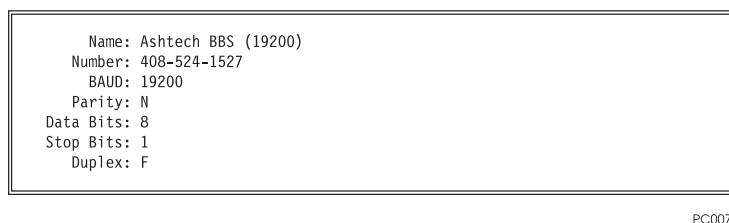


Figure 5.9: Pop-Up Editing Screen (When Dialing)

To change an entry:

- Highlight the entry and make the appropriate changes. You can scroll through the BAUD, Parity, Data Bits, Stop Bits, and Duplex settings by pressing <ENTER>.
- Once all desired changes have been made, press <F10> to invoke the changes and return to the dialing screen, or press <Esc> to ignore any changes and return to the dialing screen.
- To return to the main window, press <Esc>.



The entry for Number is the phone number that is inserted between the dialing prefix and suffix when forming the string to be sent to the modem for dialing. Therefore, the data entered in this field must be acceptable to your modem.

Adding a Dialing Entry

In the dialing screen, to add an entry, press A to access the edit screen as described above.

Deleting an Entry

In the dialing screen, to delete an entry, highlight the entry and press <DELETE>.

Saving the Phone Numbers

REMOTE maintains a run-time copy of the disk resident file PHONENUM.LST. In the dialing screen, to save any changes to the phone numbers, press W.

Exiting the Dialing Screen

Control is returned to the main window under the following conditions:

- Pressing <F10> or <Esc> from the dialing screen,
- A valid connect is established when dialing a remote, or
- The number of redial attempts has exceeded the maximum.

Miscellaneous Parameters Screen: <ALT>+<O>

From the main window, access the miscellaneous parameters by pressing <ALT>+<O>. For the factory default parameters, observe:

Transfer Parameters	
Max Start-up Errors:	15
Max Consecutive Block Errors:	30
Max Total Block Errors:	100

| <Esc> - Abort Edit <F10> - Accept Changes | |

Figure 5.10: Factory Default Parameters

To change a parameter:

- Highlight the desired field, and type in the desired value.
- Once all desired changes have been made, press <F10> to invoke the changes and return to the main window, or
- Press <Esc> to ignore any changes and return to the main window.

In this release, the additional parameters which are supported apply only to Protocol Transfers. These are the transfer of files via modem, as is done when downloading receiver image files. These parameters define the maximum number of errors acceptable prior to terminating a protocol transfer. The parameters can be adjusted to suit noisier communication links but can cause the "time-out" of a transfer to grow considerably. For example, in a xmodem transfer, a block error is generated (thus incrementing the error counters) when the remote system does not provide any data

within a given time frame (currently 350 times the time it takes to send one character). The available parameters are:

- **Max Start-up Errors** - defines the maximum errors (or wait states of 1.5 seconds) before it is assumed that the remote system has failed to begin protocol transfer.
- **Max Consecutive Block Errors** - defines the maximum number of consecutive blocks in error. This is useful when the remote system is downed for some reason; REMOTE will time-out and terminate protocol transfer.
- **Max Total Block Errors** - defines the maximum number of blocks in error, total, that is acceptable prior to terminating the transfer.

Receiver (Tracking) Status Screen: <ALT>+<S>

This screen combines information available from several receiver screens into one display. It only provides information; users cannot set receiver parameters through this display. For descriptions of the displayed parameters, see the operating manual for your Ashtech receiver.

- From the main window, access the receiver status menu by pressing <ALT>+<S>.
- REMOTE then attempts to establish communication between the computer and the receiver.
- Until REMOTE establishes communication, observe:

RECEIVER STATUS.												Station Name:				GPS:				- : :																											
SVPRN												Recv type:																																			
CHAN 1 2 3 4 5 6 7 8 9 10 11 12												NAV:																																			
L1C S/N												Channel:																																			
L1P S/N																																															
L2P S/N																																															
Cnt L1C												WARNING: 5 CONSECUTIVE BAD MESSAGES FOR RECEIVER MENU X																																			
Cnt L1P																																															
Cnt L2C																																															
Elev																																															
Az																																															
URA																																															
H1th																																															
Fixed Position												Navigation Solution																																			
LAT:												LAT:												PDOP:																							
LON:												LON:												HDOP:																							
Ht:												Ht:												VDOP:																							
												SVs:												Count:												TDOP:											

PC0080

Figure 5.11: Remote Screen

This is a blank display template with no data, and X in the WARNING message is 0, 1, 2, 4 or 9, depending on the screen data REMOTE is polling.

When REMOTE establishes communication, it updates the data fields in the display template with values from the various receiver screens; observe, typically:

RECEIVER STATUS.													Station Name:0000													GPS: 094-16:51:05												
SVPRN	30	20	32	19	12	3	25	14	15	31	29	18	Recv type: LM-XII																									
CHAN	1	2	3	4	5	6	7	8	9	10	11	12	NAV: 7A																									
L1 S/N	SNF			030			055			099			SNF	041	Channel: 64																							
L2C S/N				005			033			099			017			013																						
Cnt L1				99			99			99			99			Num Files: 28																						
Cnt L2C				--			--			--			--			Free Memory: 89%																						
Elev				06			25			86			19			21																						
Az				227			046			266			199			285																						
URA				07			07			07			07			07																						
Hlth				00			00			00			00			00																						
Fixed Position													Navigation Solution																									
LAT: N	0	0	0.000000										LAT: N	37	22	22.310013								PDOP: 002														
LON: E	0	0	0.000000										LON: W	121	59	51.677058								HDOP: 001														
Ht:	0.0000												Ht:	75.4408												VDOP: 001												
													SVs: 5 Count: 10419 TDOP: 000																									

PC0079

Figure 5.12: Display Template

To return to the main window, press <Esc>. On this display:

- **Station Name** - same as SITE identifier on Screen 9
- **GPS: ddd-hh:mm:ss** - is the GPS day (same as Screen 4, subscreen SESSION PGM) and the GPS time (hours:minutes:seconds - same as Screen 0)
- **SVPRN** and **CHAN** - same as sv (satellite PRN) and channel on Screen 0
- **L1 S/N** and **L2C S/N** (in this case) - same as s/n (signal-to-noise ratio) on screen 1 and L2C on Screen 0
- **Recv type**, **NAV**, and **Channel** - same as: Screen 4, subscreen **SUBCOMMANDS**, **Code of command: 888**; or Screen 8, system level command 888.



Command 888 displays configuration identification:

- **Cnt L1** and **Cnt L2C** (in this case) - same as epochs of continuous data on Screen 1
- **Elev, Az, URA, and Hlth** - same as elv (elevation angle), azm (azimuth angle), ura (range accuracy), and hel (health) on Screen 1
- **Num files** and **Free Memory** - same as, respectively, number of files and EQHR (XX) avail on Screen 8
- **Fixed Position: LATitude/LONGitude/Ht** (coordinates in degrees. minutes, and decimal seconds; height in meters) - same as the POS line (in degrees:decimal minutes) on Screen 4
- **Navigation Solution: LAT/LON/Ht, SVs, PDOP, HDOP, VDOP, TDOP, and Count** - same as, respectively, LATitude/LONGitude/ALTitude, svs (number of satellites), pdop, hdop, vdop, tdop, and first line position counter on Screen 2

Tracking Mode

The lines of data for the S/N (signal-to-noise) and Cnt (epochs of continuous data) parameters vary according to the receiver's current tracking mode:

- **L1C** for C/A code only on band L1
- **L1P** for P code on band L1
- **L2P** for P code on band L2
- **L2C** for codeless on band L2

Settable Parameters Screen: <ALT>+<P>

Several parameters governing the receiver can be set from the receiver parameters display (settable parameters menu).

- From the main window, access the settable parameters menu by pressing <ALT>+<P>
- REMOTE then attempts to establish communication between the computer and the receiver.

- Until REMOTE establishes communication, observe:

SITE INFORMATION
Lat: N 0 0 0.0000000 Station Name: _____ Receiver SN: _____
Lon: W 0 0 0.0000000 Antenna Hght: 0.0000(m) Antenna SN: _____
Ht: 0.00000 Unh1thy SVs: N

SESSION PROGRAMMING. Reference Day: 000 Offset Per Day: 00:00
Start End SPAN Ep Elev Min Data
Session Type
A OBTAINING CURRENT SETTINGS FROM REMOTE SYSTEM 0
B 0
C 0:00:00 0:00:00 0:00:00 20 10 3 0
D 0:00:00 0:00:00 0:00:00 20 10 3 0
E 0:00:00 0:00:00 0:00:00 20 10 3 0
F 0:00:00 0:00:00 0:00:00 20 10 3 0
G 0:00:00 0:00:00 0:00:00 20 10 3 0
H 0:00:00 0:00:00 0:00:00 20 10 3 0
I 0:00:00 0:00:00 0:00:00 20 10 3 0
J 0:00:00 0:00:00 0:00:00 20 10 3 0

TRACKING CONTROL. Auto Tracking Selection: Y
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 ON OFF
17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32

PC0081

Figure 5.13: Remote Established Communication

If REMOTE does not establish communication:

- It overlays this blank setttable parameters menu with a message:

WARNING

5 Consecutive Bad Messages for Receiver Menu X.

Where:

- X is 4, 7 or 9, depending on the screen REMOTE is polling
- The settable parameters information is not updated.

If REMOTE does establish communication; observe, typically:

SITE INFORMATION													
Lat: N 37 21 59.988000			Station Name: QA_9			Receiver SN: 899							
Lon: W121 59 59.982000			Antenna Hght: 0.0000(m)			Antenna SN: 212							
Ht: 11.00000			Unh1thy SVs: N										
SESSION PROGRAMMING. Reference Day: 100 Offset Per Day: 00:00													
Start		End		SPAN		Ep		Elev		Min		Data	
Session Time(GMT)		Time(GMT)		TIME						Int		Mask Svs Type	
A 0:00:00		23:59:59		23:59:59		15		10		1		0	
B 0:00:00		0:00:00		0:00:00		0		0		0		0	
C 0:00:00		0:00:00		0:00:00		0		0		0		0	
D 0:00:00		0:00:00		0:00:00		0		0		0		0	
E 0:00:00		0:00:00		0:00:00		0		0		0		0	
F 0:00:00		0:00:00		0:00:00		0		0		0		0	
G 0:00:00		0:00:00		0:00:00		0		0		0		0	
H 0:00:00		0:00:00		0:00:00		0		0		0		0	
I 0:00:00		0:00:00		0:00:00		0		0		0		0	
J 0:00:00		0:00:00		0:00:00		0		0		0		0	
TRACKING CONTROL. Auto Tracking Selection: Y													
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16										ON OFF			
17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32													

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Figure 5.14: Remote Established Communication

To change a parameter:

1. Highlight the desired field and type in the desired value.
2. Once all desired changes have been made, press <F10> to send the changes to the remote receiver and return to the main window, or press <Esc> to ignore any changes and return to the main window.

If you send the change, REMOTE displays the message

- Sending Current Setting to Remote System

If communication with the receiver has been interrupted since you accessed the settable parameters menu, REMOTE displays:

- **ERROR:** Receiver did not accept requested changes. Try again!
- **SITE INFORMATION**, the top portion of the screen, allows users to set parameters on receiver Screens 4 and 9:
- **Latitude**, **Longitude**, **Ht** (altitude) are the POS coordinates on Screen 4
- **Station Name**, **Antenna Hght**, **Receiver SN**, and **Antenna Sn**, - same as, respectively, SITE identifier, HI Before, RCV#, and ANT# on Screen 9.
- **Unhhlthy SVs** - same as Screen 4, subscreen POSITION
- **Session Programming**, the middle portion of the screen, acts the same as receiver screen 4, subscreen SESSION PGM except:

Session programming is disabled (that is, continuous recording) by setting the Reference Day to 000. (This replaces the INUSE parameter in the receiver's session programming.)

A particular session is disabled by setting the Start Time and End Time to 00:00:00. (This replaces the session toggle in the receiver's session programming.)

The session times are automatically sorted by moving the cursor out of the middle portion.

Checking is performed to ensure that no sessions overlap. In such a case, REMOTE generates an error message and does not allow this information to be sent to the remote receiver.

Checking is performed to ensure that the total time from the beginning of first session to the end of the last session does not exceed 24 hours. If the time does exceed this criterion, an error message is displayed and this information is not sent to the remote receiver.

Tracking Control, the bottom portion of the screen, is used to disable specific satellites. These parameters correspond with receiver Screen 7. However, on this menu, a satellite is toggled between selected and deselected by pressing <ENTER>. The display attribute related to a selected SV corresponds with that of the word ON and deselected with OFF.

File Processing Receiver Files Screen: <ALT>+<F>

REMOTE downloads each selected receiver file as a RAM image file (R-file) which is a condensed version of the B-files, E-files and S-files. You must convert the R-files into B-files, E-files and S-files before further processing. (Refer to Converting Receiver Files later in this section for details.) R-files are saved in the current directory. Whenever you download or delete receiver files, REMOTE creates, in the current directory, a remote summary file called REMOTE.SUM describing the delete

or download process. If the current directory already contains a REMOTE.SUM file, the new information is appended to that file. (For details, see the paragraph Files Generated by REMOTE in this section.)

- From the main menu, access the receiver files menu by pressing <ALT>+<F>

REMOTE attempts to establish communication between the computer and the receiver. If REMOTE does not establish communication within about 10 seconds, it halts the attempt and displays the message:

WARNING

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If communication is established, observe:

- ONE moment receiver FAT being downloaded followed by a display of all receiver files, including the active one, associated with Screen 8; for example:

RECEIVER FILES

Total Files: 28

	DESTINATION			START	END	SIZE
TAG	FILE NAME	SITE	SESS	DAY/TIME (GMT)	DAY/TIME (GMT)	WORDS
9	R0000I92.094	0000	I	094/16:20:43	094/16:20:51	1377
10	R0000J92.094	0000	J	094/16:20:51	094/16:20:59	1511
11	R0000K92.094	0000	K	094/16:21:00	094/16:21:07	1416
12	R0000K92.094	0000	L	094/16:21:07	094/16:21:15	1377
13	R0000K92.094	0000	M	094/16:21:16	094/16:21:24	1458
14	R0000K92.094	0000	N	094/16:21:25	094/16:21:33	1712
15	R0000K92.094	0000	O	094/16:21:33	094/16:21:41	1377
16	R0000K92.094	0000	P	094/16:21:42	094/16:21:51	1620
17	R0000K92.094	0000	Q	094/16:21:52	094/16:22:00	1578
18	R0000K92.094	0000	R	094/16:22:00	094/16:22:07	1268

<PgUp>Free Memory: 89%<PgDn>

<F1> - Download Almanac
<CR> - Toggle Tag<F5> - Delete Tagged Files<F10> - Download Tagged Files

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Figure 5.15: Receiver Files Commands

The commands (listed at the bottom of the screen) are available.

- <PgUp> displays the previous page (screenful) of file names. This key is available when there are more than 10 files and the current page does not

display files higher on the list. When <PgUp> is not available, the <PgUp> label is not displayed.

- <PgDn> displays the next page (screenful) of file names. This key is available when there are more than 10 files and the current page does not display files lower on the list. When <PgDn> is not available, the <PgDn> label is not displayed.
- <F1> downloads an almanac file for use by the Multi-Site Mission Planning program.
- <F5> deletes the selected files from the receiver and downloads the receiver FAT again.
- <F10> downloads the selected files.
- <ENTER> toggles the selection of a given file with the cursor on the selected file TAG

The DESTINATION FILE NAME column listing lists the name of the computer target R-file into which the selected receiver file will be downloaded. The file naming convention is:

tnnnnsyy.ddd

The fields are defined in the table below.

Table 5.3: Message Structure

Field	Description
t	is the file type, by default R for a RAM image file.
nnnn	is the 4-character site name.
s	is the session code (A-Z).
yy	are the last two digits of the year.
ddd	is the day of the year.

During the download, REMOTE displays the status of the process, as shown:

Protocol: XMODEM Target File: RQA_9A91.118 File Size: 205096 Total Blocks: 1603 Transfer Time: 00:00:01 Completed: 1% Byte Count: 3072 Block Number: 24 Consecutive Errors: 0 Total Block Errors: 0 Messages:
Note: Hit keyboard to interrupt!

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Figure 5.16: Remote Display Status

If you press any key during the download, REMOTE halts the transfer and displays the message:

<C>ontinue or <S>kip curr. file or <A>bort all?

Once a file transfer is complete, REMOTE returns to the main window, and the current directory contains downloaded files as well as the REMOTE.SUM file.

Converting Receiver Files

The RAM image files (R-files) downloaded from the receiver to the computer are a condensed version of the B--files, E-files and S-files. You must convert the R-files into B-files, E-files and S-files using the CGRS HOSE program before further processing. This conversion of files in the computer uses the Download receiver files option of CGRS HOSE. The CGRS HOSE display will look and, for the most part, will act as if a receiver is connected.

Once R-files have been downloaded, return to the main menu, and exit REMOTE.

At the DOS prompt, change to the directory containing the desired R-file

Run the program CGHOSE.EXE using the command:

CGHOSE -r rfilename <ENTER>

where rfilename is the name of the desired R-file.

Observe the following screen, typically:

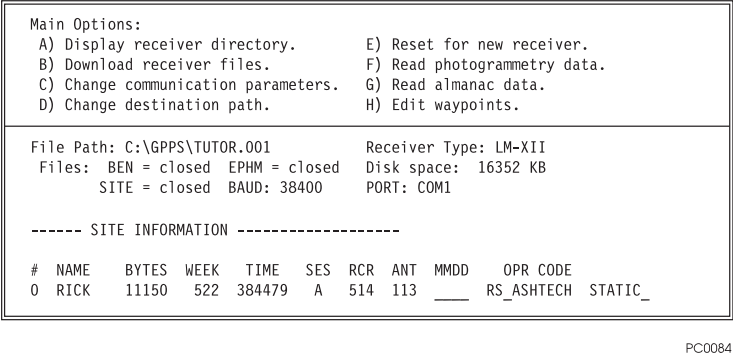
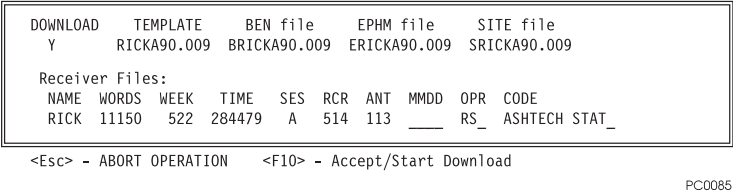


Figure 5.17: File Options

Select the option B) Download receiver files; observe:



From the main window, access the RTCM status display by pressing <ALT>+<R>. REMOTE attempts to establish communication between the computer and the receiver. Until REMOTE establishes communication, observe:

RTCM STATUS DISPLAY				
RTCM Mode:	Type: 0	Ref.ID: 0	Ref.Health: 0	
Sequence NO:	0	Z-Count: 0.0	Frame Length: 0	
		Age: 0		
SVPRN		CQA: 0.00%		
PRC		Offset: 0		
RRC				
MODE	OBTAINING CURRENT SETTINGS FROM REMOTE SYSTEM			
S/UD				
Message:				
RTCM PARAMETER SETTING MENU				
Output Port:	RTCM Mode: OFF	Ref.ID: 0	Ref.Health: 0	
Speed: 0	MAX Age: 0	Reset:	Quality: 0	
Type: 0 0 0 0		Type6: OFF		
FREQ: 0 0 0 0		SEQNU:		
Message:				

Mode,Port,Type6,Reset,Speed,SEQNU:Toggle by PGUP/PGDN Send:<F10> Exit:<ESC>

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Figure 5.19: RTCM Status

If REMOTE cannot establish communication, it flashes the message:

WARNING

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and returns you to the main menu. When REMOTE does establish communication, observe, typically:

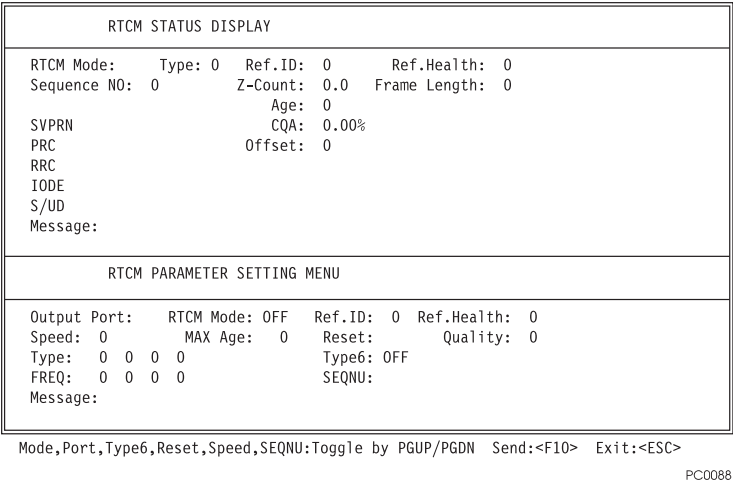


Figure 5.20: Established Communication (Remote)

- **RTCM STATUS DISPLAY**, the top section, displays the current status of the RTCM differential corrections and associated parameters.
- **RTCM PARAMETER SETTING MENU**, the bottom section, displays the RTCM differential parameters and allows you to set them.
- **RTCM STATUS DISPLAY**, These parameters are also available on receiver Screen 5 if the differential option is available in the receiver, and on Screen 4, subscreen **DIFFERENTIAL**, **RTCM** format is selected.
- **RTCM Mode**, **BASE** or **REMOTE** - matches the **RTCM** field on the top line of the receiver screen
- **Sequence NO** is **SQNU**, RTCM message sequence number
- **Type** indicates the type of message to be generated or being received
- **Ref.ID** is **STID**, the reference station identification
- **Z-Count** is **ZCNT**, the RTCM message Z-count
- **Ref. Health** is **STHE**, the reference station health
- **Frame Length** is **FLEN**, the RTCM message frame length
- **Age** for remote mode, shows the age of received messages in seconds
- **CQA** is **QA**, the communication-quality factor, defined as: (number of good messages / total number of messages) * 100
- **Offset** is the number of bits from the beginning of the RTCM byte in case of bit slippage

- **SVPRN** is the satellite PRN number
- **PRC** is the pseudo-range correction in meters. Negative numbers are shown in inverse video
- **RRC** is the range-rate correction in centimeters per second. Negative numbers are shown in inverse video
- **IODE** is issue of data ephemerides
- **S/UD** is the scale factor and user-differential range error
- **MESSAGE** in remote mode, contains any special messages (Type 16) received from the base station. Messages are scrolled automatically; the old messages are pushed down. In the receiver this message appears in Screen 4, subscreen DIFFERENTIAL, subscreen RTCM OPTIONS MENU.
- **RTCM PARAMETER SETTING** Menu - These parameters are also available through receiver Screen 4, subscreen DIFFERENTIAL.
- **Output Port** initially matches the receiver output on PORT A or output on PORT B field of receiver subscreen DIFFERENTIAL.
- **Reset**, initialize RTCM - same as receiver subscreen SUBCOMMANDS, Code of command: 737; or Screen 8, system level command 737.



The remaining parameters correspond to the receiver RTCM OPTIONS MENU subscreen.

- **Speed** sets the number of bits per second issuing from the serial port. The available speeds are 25, 50, 100, 110, 150, 200, 250, 300 and 1500. Default is 50 bits per second. Not used in remote mode.
- **RTCM Mode** default is OFF; toggle it to BASE or REMOTE. This parameter sets the receiver to operate RTCM differential in BASE, REMOTE, or OFF (nonactive) mode.
- **MAX Age** is MAXAGE, in remote mode, specifies a maximum age, in seconds, for messages. The user receiver uses differential messages which are not older than MAXAGE. MAXAGE may be set to a value from 0 to 1199 seconds; default is 120; it is not used in base mode.
- **Ref.ID** is STID, the reference station identification supplied by the user. Can be set to any number from 0 to 1023.
- **Ref. Health** is STHE, the reference station health. It can be set to a value from 0 to 7.
- **Quality** is QAFREQ, in remote mode, allows evaluation of the communication quality between the base station and the user equipment.

QAFREQ may be set to any number from 0 to 999. Defaults to 100. Not used in base mode.

- **Type 6** enables or disables the output of type 6 messages.
- **SEQNU** is SEQ, check or not for the sequence number in a message to be sequentially to accept the RTCM message (used in remote mode only).
- **Type** indicates the type of message that will be generated. The receiver can generate message Types 1, 2, 3, 6 and 16. The default is 1.



When PL1 code is selected, Type 24 is displayed instead of Type 1.

- **FREQ** specifies the period/frequency for message Types 1, 3, and 16. Each can be set to a value that ranges from 0 to 99. 0 means no message is generated. 99 generates a message continuously. A value from 1 to 98 specifies a number of minutes between transmissions.
- **MESSAGE** contains an RTCM message (up to 32 characters long) to send from the base station to user equipment. To do that, enter the FREQ value directly under message Type 16, and type in the message.

To change a parameter, in the RTCM PARAMETER SETTING Menu section:

- Using the arrow or <TAB> keys, highlight the desired field.
- For the fields Output Port, RTCM Mode, Speed, Reset, Type 6, and SEQNU use the <Page Up> and <Page Down> keys to toggle through the available options.
- For the fields MAX Age, Ref.ID, Ref. Health, and Quality, type in the desired value.
- Once all changes have been made, press <F10> to send the changes to the receiver and return to this RTCM setting and display screen.
- To exit this screen and return to the main menu, press <Esc>.

Operational Notes

If REMOTE is communicating with the same receiver port currently defined as the differential output port, it will not allow changing the differential mode to base or remote unless you first change the RTCM Output Port parameter. REMOTE.EXE will not accept a change to RTCM Mode and Output Port in the same setting. Instead:

1. Set the port, and press <F10> to send the command to the receiver.
2. Set the mode and other desired parameters, and press <F10> again.

The receiver does not accept changes to the MAX Age and Quality parameters when it is set to base mode; a base receiver does not use these parameters. The same is true for a receiver set to remote mode and the parameters Type 6, Ref. Health, Speed, and FREQuency.

Miscellaneous: <ALT>+<A>, <I>, <Z>, <L>, <X>.

All these commands work from the main window only, except for the attribute command which works from any display or menu.

Setup/Window Attributes, <ALT>+<A> Command.

To access the display attribute editing window, press <ALT>+<a>. This display has the following format:

<Normal Text>

This display allows users to change display (color and flash) attributes for the currently active display or menu only.

Modem Initialization String: <ALT>+<I>

To send the modem initialization string to the modem, press <Alt>+<I>. This facilitates debugging the modem initialization string without using the dialing screen.



The modem must be in command mode.

Modem Hangup Sequence: <ALT>+<Z>

To begin the modem hangup sequence, press <ALT>+<Z>. First the modem hang command is sent and, if DTR Low to Hang is set (see the paragraph Modem Parameters in this section), DTR is dropped for 500 milliseconds.

Capture Mode <ALT>+<L>

If REMOTE is receiving real-time data through the communication port, this command allows users to turn the capture mode ON and open a file to save this information. Press <ALT>+<L>; observe:

A screenshot of a terminal window titled "Enter Name of LOG File". Inside the window, there is a label "Filename:" followed by a large rectangular text input field. Below the input field, there are two lines of text: "<Esc> - ABORT" on the left and "<CR> or <F10> - ACCEPT" on the right. In the bottom right corner of the terminal window, the text "PC0090" is displayed.

Figure 5.21: Capture Mode Screen

Type in the destination file name as desired.

- Press <ENTER> or <F10> to start the capture mode.
- The CAPTURE mode shown on the status line changes to ON.
- To close the file and turn CAPTURE mode OFF, press <ALT>+<L> again.
- Communication with Receiver: Exit Remote, <ALT>+<X> Command.
- Pressing <ALT>+<X> from the main window terminates REMOTE upon valid response to termination prompt.

Command Line Options

REMOTE accepts these command line parameters. The command has the following format:

REMOTE <option_list> <secondary_args>

-c num for automatic call and download of receiver data. The num option represents the phone entry number. If num is set to 0, REMOTE.EXE assumes a direct connection.



If the -g option is not used with -c, all non-active files will be downloaded. A file is active when the receiver is logging data and is labeled -ACTIVE- on the receiver files menu.

When -c is selected, the file remote summary file REMOTE.SUM is either created (when it does not exist) or is appended to with a summary of the download.

-d hh.hh used with -c to automatically delete downloaded files. Files over hh.hh hours old (by time of closure) are deleted.



Files which do not download correctly (that is, could not recover from errors), are not deleted from the receiver.

-g hh.hh used with -c to automatically download files closed less than or equal to hh.hh hours prior to the current receiver time.

-h fname used with -c to create a CGHOSE.EXE batch file: fname specifies the name of the batch file to be created.

-s option for SCRIPPS; i.e., delete output (disk) files if there is an error during auto-download.

For example,

- REMOTE -C 5 -D 2.5 -HS DECOMP.BAT<ENTER>
executes REMOTE in auto-dial and download mode, dialing phone number entry 5, deleting all files over 2.5 hours old provided there are no fatal download errors, setting up a batch routine to call CGHOSE.EXE for

expanding all files downloaded, and automatically deleting any created computer target files corresponding to sessions having fatal download errors.

Troubleshooting

REMOTE maintains a communication speed as does the remote system; they are independent. Therefore, REMOTE must have its communication speed set the same as the receiver's in order for communication to occur. If the computer is at one speed and the remote system at another, no data can be properly exchanged.

Troubleshooting Failure to Communicate

1. If WinPrism detects a communication problem when you select TRANSFER/LOGGER, REMOTE, WAYPOINT, or DOWNLOAD, you'll see an appropriate error message.
2. Probable causes are:
 - Receiver is turned OFF.
 - Baud rate is too high.
 - Cable between the receiver and the computer is connected to a different computer port than the port configured by the particular TRANSFER function.
 - Cable connections are not tight.
 - Cable is not a full handshake null modem cable for a direct link, or it is not a modem cable for a link via modem.
 - Computer communication port is not configured as a data communications equipment (DCE) port. If the computer port is a data terminal equipment (DTE) port, then use a full handshake cable or add a null modem adapter to the Ashtech HOSE cable.
3. If you remove the power from the receiver during a file transfer, the results are unpredictable; restart the function.
4. If you move the communication cable from one receiver to another, always select TRANSFER/DOWNLOAD/ Reset for the new receiver. Disconnecting the receiver cable without resetting the computer and receiver, could corrupt the computer data files.

Global Product Support

If you have any problems or require further assistance, the Customer Support team can be reached through the following:

- telephone
- email
- Ashtech BBS system
- Internet

Please refer to the documentation before contacting Customer Support. Many common problems are identified within the documentation and suggestions are offered for solving them.

Ashtech customer support:

Sunnyvale, California, USA

800 Number: 1-800-229-2400

Local Voice Line: (408) 524-1680

fax Line: (408) 524-1500

Email: support@ashtech.com

Ashtech Europe Ltd. Oxfordshire UK

TEL: 44 1 993 883 3533

fax : 44 1 993 883 3977

Solutions for Common Problems

- Check cables and power supplies. Many hardware problems are related to these simple problems.
- If the problem seems to be with your computer, re-boot it to clear the system's RAM memory.
- If you are experiencing receiver problems, power cycle the receiver or try a different port.
- Verify the batteries are charged.

If none of these suggestions solves the problem, contact the Customer Support team. To assist the Customer Support team, please ensure the following information is available:

Table 7.1: GPS Product Information

Information Category	Your actual numbers
Receiver model	
Receiver serial #	
Software version #	
Software key serial #	
Firmware version #	
Options*	
A clear, concise description of the problem.	
* The firmware version # and options can be obtained using the \$PASHQ,RID (receiver identification) command.	

Corporate Web Page

You can obtain data sheets, GPS information, application notes, and a variety of useful information from Ashtech's Internet web page. In addition, you can access the BBS through the web site, and locate additional support areas such as frequently asked questions and training previews. The Internet address is:

<http://www.ashtech.com>

Ashtech Bulletin Board

General

If your computer contains a modem and communications software, you can access information from Ashtech's computer Bulletin Board System (BBS). Two data lines are available 24 hours a day, 7 days a week, except for short periods when the system is off-line for maintenance. The Ashtech BBS uses the TBBS BBS software and provides several important services. You can download a current almanac, get the status of the GPS satellites, get NANUS (Notices Advisory to Navstar Users), and look at solar and geomagnetic data from SESC (Space Environment Services Center) in Boulder, Colorado. On occasion, the BBS has been used to carry software updates and document files.

The first time you call, you will be able to log on and browse for up to 30 minutes, but you will not be able to download. During this initial logon, you will be asked for identifying information and a password; anonymous callers will not be given access to the system. Remember exactly how you entered your name and how you spelled your password; write them on paper, they will be your entry into the system in the future.

After you have logged on and registered, the SYSOP verifies your status as a customer, and establishes your security code commensurate with the hardware and software you are using.

The BBS phone numbers are:

- Line 1 408-524-1527 2400 to 28800 baud
- Line 2 Automatic rollover 2400 to 14400 baud if line 1 is busy

Parameters: N,8,1 (No parity, 8 bits, 1 stop bit, full duplex)

Supported Protocols

Table 5.1 lists the protocols supported by the Customer Support BBS.

Figure 5.1: Protocols

Protocol	Description
XMODEM	Widely supported, uses 128-byte blocks. Good for moderately noisy lines. May cause file integrity problems by rounding.
XMODEM-1k	Uses 1024-byte blocks. Supposedly better for 2400 baud+. May cause file integrity problems by rounding.
YMODEM	Also known as YMODEM Batch, passes filename and size, eliminating rounding problems. Capable of multiple file transfer (batch).
YMODEM-G	Fast protocol for use only with error-free data links. Not recommended.
SEAlink	Passes filename and size, eliminating rounding problems. Capable of file transfer (batch). Good for noisy line conditions and links where delays occur (satellite-based long distance, or packet-switched networks).
KERMIT	Slow, but works with almost any transmission medium.
SuperKERMIT	Same as KERMIT, but faster. Good for noisy line conditions and where delays occur (satellite-based long distance, or packet-switched networks).
ZMODEM	Newer protocol that supports batch and exact file size. Good for noisy conditions. Includes all ZMODEM-900 extensions.
ASCII	Only for users with no other protocols available. No error checking, not recommended.



The preferred protocols are **ZMODEM**, **SEAlink**, **YMODEM**.

Training Courses

We provide a full range of GPS training courses for the novice and advanced user. Arrangements can be made for customized, on-site training to fit your specific needs.

Ashtech training courses:

- Conventional GPS Surveying
- Solving Problem Data Sets
- Real-Time Z Applications
- Reliance for GPS/GIS

For detailed information, call or email Ashtech, or contact your local Ashtech dealer. The Ashtech WWW pages contains information on course dates, costs, and content.

Repair Centers

In addition to repair centers in California and England, authorized distributors in 27 countries can assist you with your service needs.

Ashtech Inc., Sunnyvale, California

Voice: (408) 524-1680

or (800) 229-2400

fax: (408) 524-1500

Ashtech Europe Ltd. Oxfordshire UK

TEL: 44 1 993 883 3533

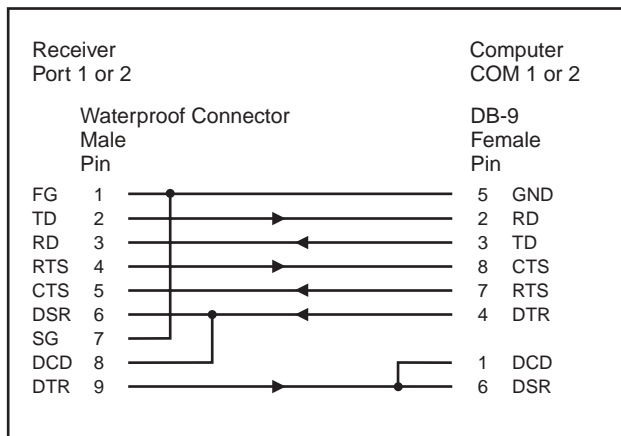
fax: 44 1 993 883 3977

Hose Cable Specification

This appendix shows the pinout specifications of the various configurations of the Sokkia HOSE cable that connects the serial port of the computer with that of the receiver for direct link communication. The HOSE cable is a full handshake null modem RS-232 with a maximum permissible length of 100 feet. The following table defines the signal abbreviations shown in the subsequent schematic diagrams for each model of HOSE cable.

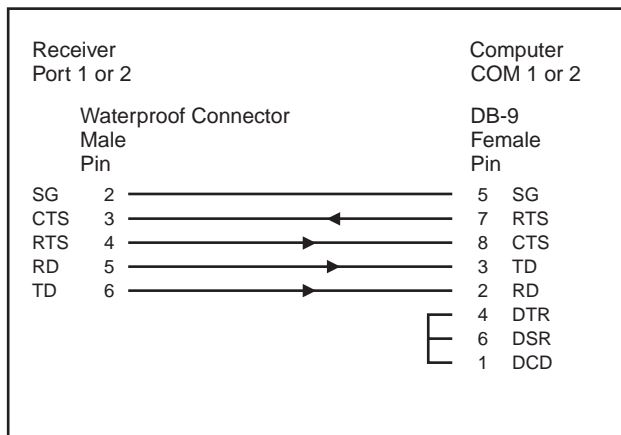
Table A.1: Signal Abbreviations

Description	Abbreviation
Frame ground	FG
Transmit data	TD
Receive Data	RD
Request to send	RTS
Clear to send	CTS
Data set ready	DSR
Signal Ground	SG
Data carrier detect	DCD
Data terminal ready	DTR



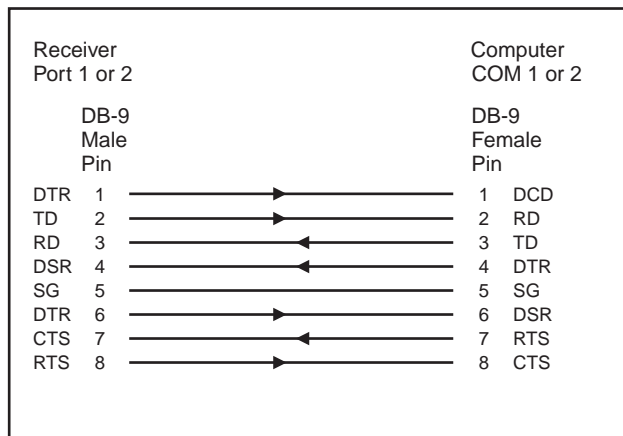
9671

Figure A.1: HOSE Cable-Waterproof Receivers



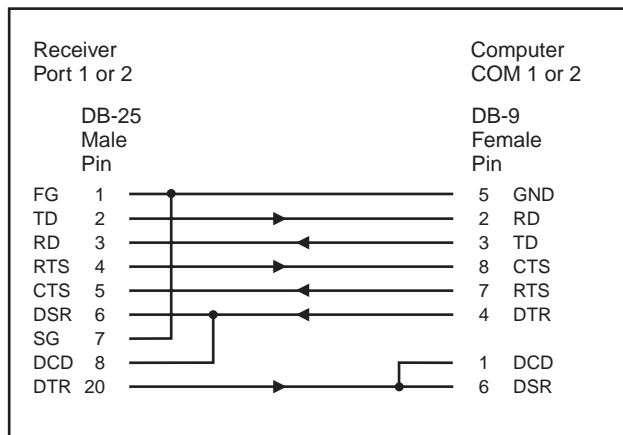
9668

Figure A.2: HOSE Cable-Waterproof Dimension Receiver



9669

Figure A.3: HOSE Cable -Splashproof 3DF Receiver

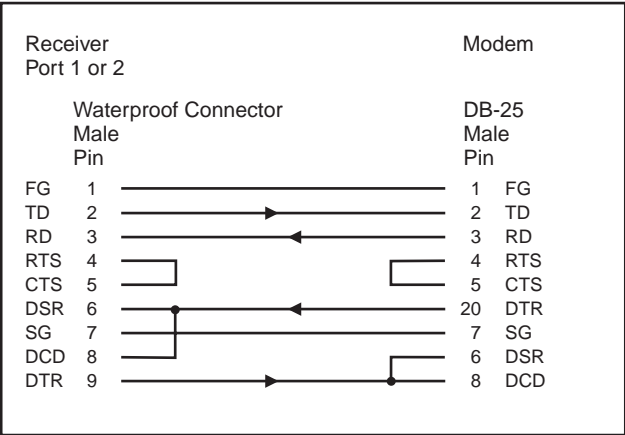


9672

Figure A.4: HOSE Cable -All Other Receiver

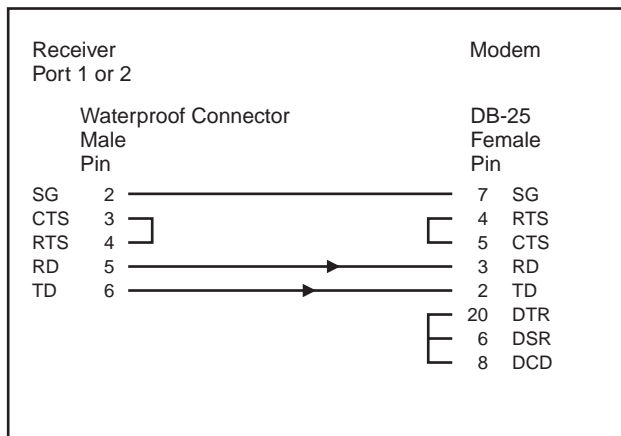
Modem Cable Specifications

This appendix shows the pinout specifications of the waterproof and splashproof configurations of the cable required to connect the serial port of the receiver with the modem. The modem cable is a straight-through RS-232 with a maximum permissible length of 100 feet. We can supply the waterproof connectors. The signal abbreviations are those defined for the HOSE cable.



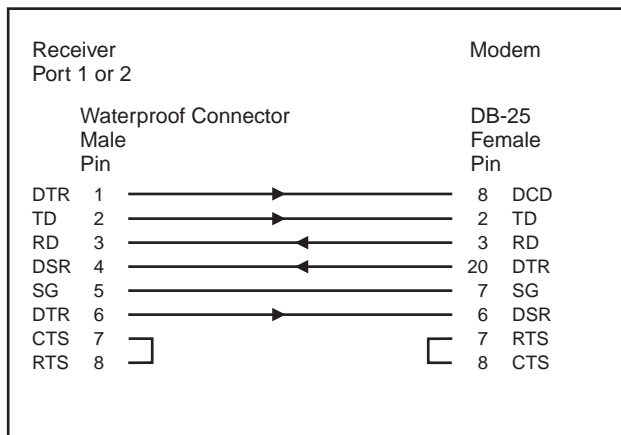
9674

Figure B.1: Modem Cable-Waterproof Receivers



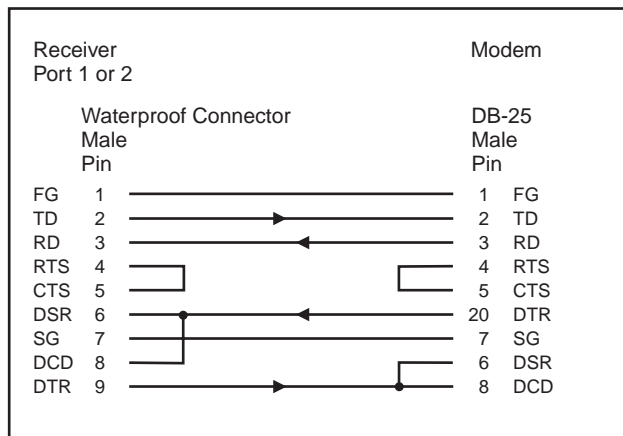
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Figure B.2: Modem Cable-Waterproof Dimension Receiver



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Figure B.3: Modem Cable-Splashproof 3DF Receiver



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Figure B.4: Modem Cable-All Other Receivers

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