

AWOS

900 Series



Remote Maintenance Monitoring (RMM) Software for Windows® 98

Version 2.0

User's Manual

2090-B27



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Remote Maintenance Monitoring (RMM)

Overview

A valuable feature of All Weather Inc.'s 900 Series AWOS Central Data Processor (CDP) Models 2090, 2090-B, and 2090-C is their built-in Remote Maintenance Monitoring (RMM) capability. RMM enables a remote computer to access an AWOS' CDP via modem and, using All Weather Inc.'s Windows®-based RMM software, to set system parameters, view system status and data, and download data and error logs. The RMM software allows manual or automatic dialing of sites, and provides menu links to file viewing functions that allow downloaded files to be accessed easily from the main screen for viewing or printing without exiting the RMM program. Other menu options provide links to configuration settings and manual dialing functions from the main RMM screen (Figure 1).

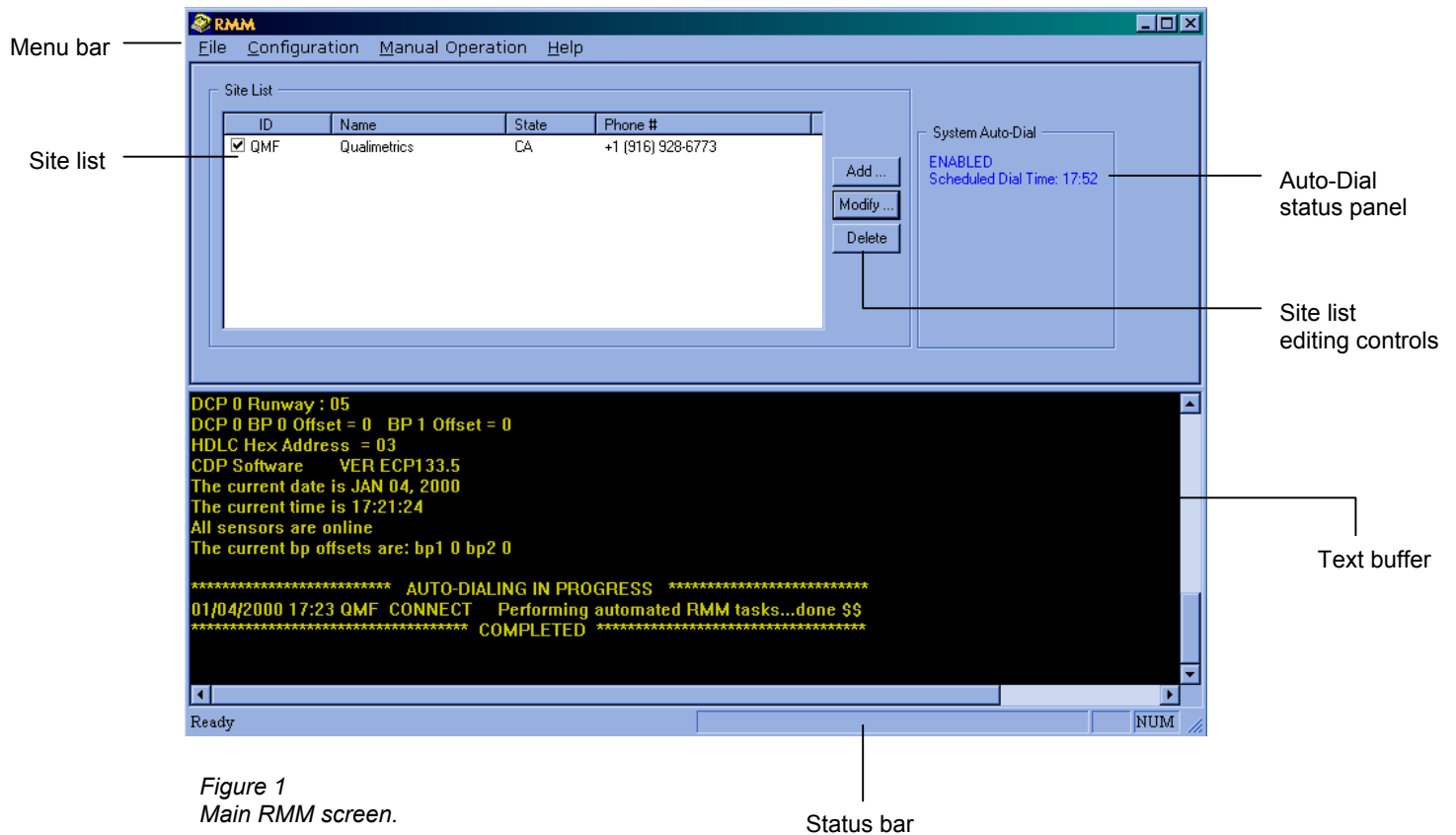


Figure 1
Main RMM screen.

RMM can be used to:

- *Download AWOS error logs to a file*
- *Download AWOS one-minute data to a file*
- *Get a current AWOS system status report*
- *Get the current AWOS reported weather observation*
- *Get the AWOS system configuration*
- *Get or set the AWOS system time*
- *Get or set the AWOS system date*
- *Get or set sensor online/offline state*
- *Get or set the VHF voice radio online/offline state*
- *Get or set BP sensor offsets*

System Requirements

- Pentium 133 MHz or higher processor
- 16 MB RAM minimum, 64 MB recommended
- Windows[®] 98, Release 2
- 100 MB hard disk space for each AWOS to be monitored
- 3½" floppy disk drive
- V.90 56 KB internal or external modem

RMM Main Screen

The RMM Main Screen (**Figure 1**) consists of a menu bar, site list, site list editing controls, auto-dial status panel, text buffer, and status bar.

- The menu bar provides access to all the RMM software's setup functions, file viewing options, and manual dialing functions. The menus are explained in detail in the relevant sections throughout this manual.
- The site list contains the list of sites routinely dialed from this location. This is one of the linchpins of the auto-dialing function, and is explained in detail, along with the site list editing controls, in the ***RMM Site List*** chapter.
- The auto-dial status panel shows the current status of the Auto-Dial function (enabled or disable), and shows the programmed auto-dial start time (if enabled). During an auto-dial session, this panel shows the progress and status of the session.
- The text buffer displays any messages from the remote site during either auto-dialing or manual dialing. During an auto-dial session, the connection status for each site and the progress of the automated RMM functions for that site will be displayed here. During a manual dial session, requested reports (such as the one-minute data report and current status

report) are displayed. The buffer will hold 512 lines before it becomes full. Once it's full, the oldest half of the buffer (the first 256 lines) will be deleted, and new text will be appended to the end.

- During operation, status messages (such as the progress of a dialing attempt) are displayed in the status bar incorporated into the lower right corner of the main screen frame. Status messages remain visible until replaced by a new message.

RMM File Structure

When installing the RMM software, you will be prompted to define a directory into which the program will be installed, and in which downloaded files will be saved. Once this main directory is defined (the default is C:\RMM), subdirectories are automatically created within this directory as defined below. Though you can name the main directory anything you like, the definitions below use the default name (RMM) for simplicity.

Main (RMM) directory: contains the program files and site list file (rmmsites.cfg). The subdirectories for the individual sites are created within this directory.

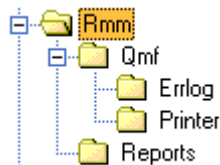
Site directory: named according to the three- or four-letter Site ID specified when adding the site to the site list (*see Page 11*). (For example: RMM\QMF). This directory contains the site's configuration file ("current.cfg"), as well as the previous configuration file ("previous.cfg"), if the configuration has been changed (*see Page 19*).

Errlog directory: a subdirectory of the site directory; contains all the downloaded ERRLOG files for the site (*see Page 25*).

Printer directory: a subdirectory of the site directory; contains all the downloaded PRINTER files for the site (*see Page 28*).

Reports directory: a subdirectory of the main (RMM) directory; contains the downloaded Call Summary Reports and Error Summary Reports (*see Pages 17 through 25*).

A typical RMM directory would look like this:



RMM Setup

Installing a Modem in Windows

Before performing any RMM tasks, the RMM computer must have a modem installed and working. This is done within Windows, and may already be in place. To check whether a modem is installed:

- 1 From the Windows task bar's *Start* menu (found at the bottom of the screen), select *Settings*, then *Control Panel*.
- 2 Double-click the *Modems* icon. A screen will be displayed showing the installed modems. If no modems are listed, click the **Add...** button.
- 3 Follow the directions on the screen to use the Windows Hardware Installation Wizard. This program will automatically detect an installed modem and add the necessary files to the operating system. You may be prompted to insert the Windows CD or disks, or to insert the modem manufacturer's driver disk.
- 4 If you are installing a new modem card or connecting a new external modem to the RMM computer, follow the instructions included with the modem for installing the modem and drivers.

Installing the RMM Software

To install the RMM software, follow the steps below. (**Note: Each AWOS site called will require 200 Kbytes of disk space per day for data files. We recommend that at least 2 GB of free disk space be available on the installation drive.**)

- 1 Insert *Installation Disk 1* into the computer's floppy drive.
- 2 From Windows (using Explorer or My Computer), double-click the file on *Installation Disk 1* named *Setup.exe*. The *RMM Setup* program will start automatically.
- 3 Follow the directions given on-screen by the Setup program until installation is complete. If requested to do so, insert *Installation Disk 2* when prompted. (**Note: You will not be prompted for Installation Disk 2 if the Setup program detects the required supporting files (DLLs, etc.) already installed on the system.**)

Configuring the Modem

When the RMM Program is started, the *Configure Modem* screen (**Figure 2**) is automatically presented, allowing you to specify modem and line connection settings. In most cases, once these settings have been specified it should not be necessary to change them. If you do need to change something, you can access the *Configure Modem* menu at any time from within the RMM software as follows:

- 1 Select **Modem...** from the *Configuration* menu on the RMM main screen's menu bar. The *Configure Modem* screen (**Figure 2**) will appear.

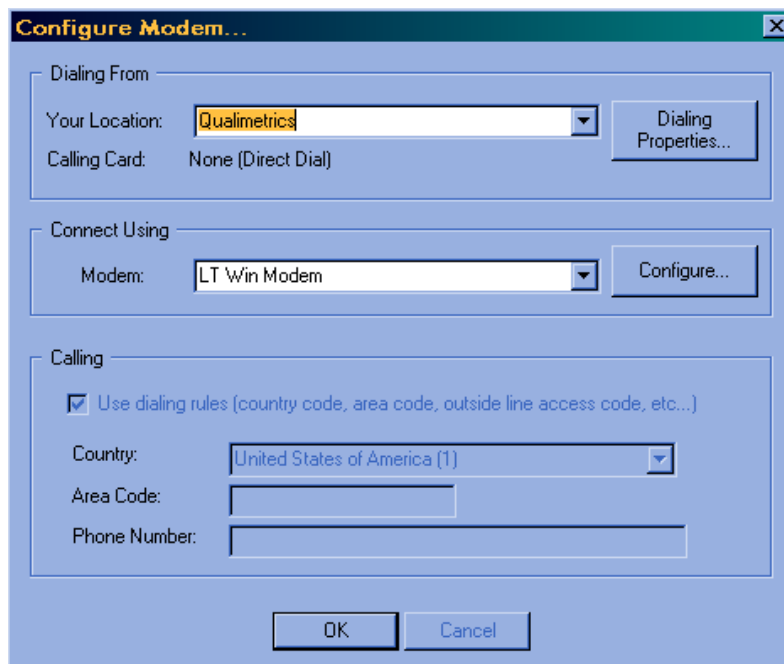


Figure 2
Configure Modem
screen.

"Dialing From"

The *Dialing From* panel lets you specify general settings for the RMM computer's modem connection, such as location name and dialing properties.

- 1 The current dialing location is shown in the *Your Location* window of the *Dialing From* panel. (Note: A location named *New Location*, with default dialing settings, is automatically created by Windows when a modem is first installed.) If more than one location profile has been created, you can select a different location from the drop-down list that appears when you click the arrow to the right of the *Your Location* box.
- 2 Select the location profile to be used for RMM, then click **Dialing Properties**.

- 3 The *Dialing Properties* screen (**Figure 3**) allows you to specify a location name, set dialing rules (whether to dial 9, etc.), and enter a calling card number for charge calls.

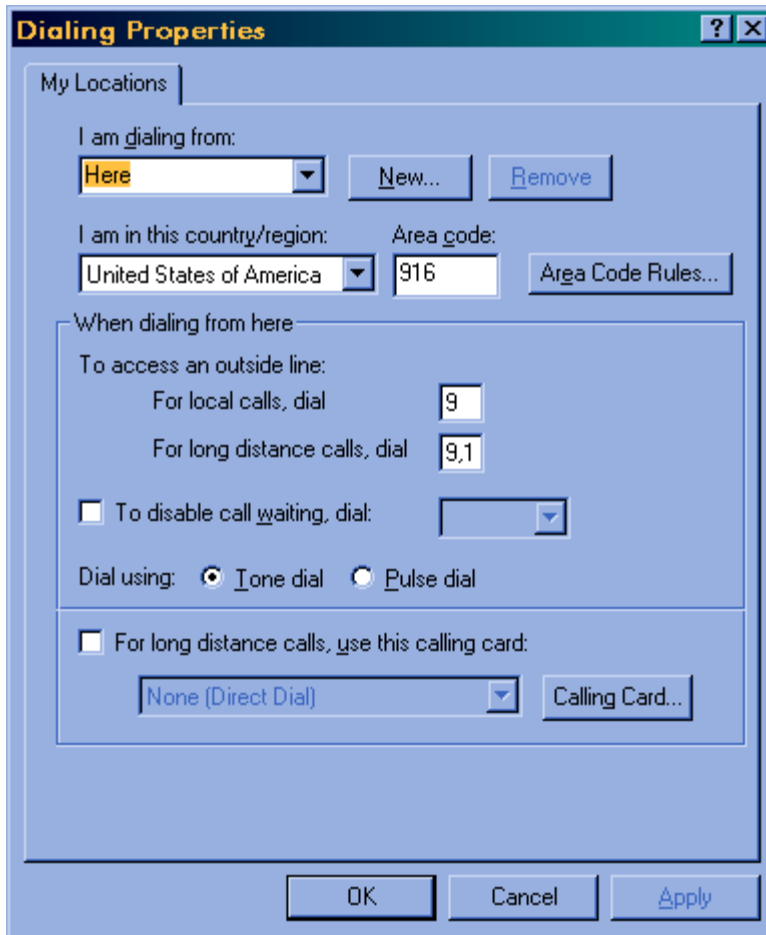


Figure 3
Dialing Properties screen.

- 4 To change the name of the selected location, click the name to highlight it, then type a new name.
- 5 If you want to add a location, click the **New...** button. A new location will be created, with the default name *New Location*. To change this name, click the name to highlight it, then type a new name.
- 6 The remaining *Dialing Properties* settings will vary from location to location. Specify the settings as required for your location, then click **OK**.

"Connect Using"

The *Connect Using* panel lets you select the modem to be used for dialing and, through the **Configure...** button, to specify modem settings. (*Note: A modem cannot be installed directly from within the RMM software. To install a modem, follow the directions provided above in **Installing a Modem in Windows***).

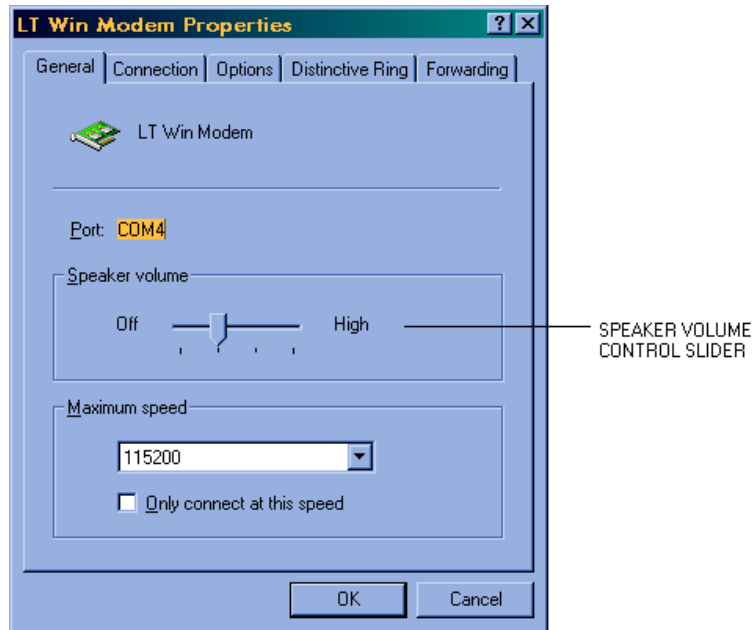
- 1 The currently selected modem is shown in the *Modem* window of the *Connect Using* panel. If more than one modem has been installed, you can select a different one from the drop-down list that appears when you click the arrow to the right of the *Modem* box. If you want only your active modem to appear on the list, delete any other modems (Standard Modem, for example) using the **Remove** function on the *Modems* control panel (**Start Menu ▶ Settings ▶ Control Panel ▶ Modems**).
- 2 Select the modem to be used for RMM.
- 3 To access the *Modem Properties* screen for the selected modem (to change modem connection settings, adjust the speaker volume, etc.), click **Configure...** The *Modem Properties* screen is part of Windows, and a link is provided from within the RMM software simply for convenience. The *Modem Properties* are set to default values for a specific modem during modem installation (*see **Installing a Modem in Windows** above*) and should not normally need to be changed. For specific *Modem Properties* setting information, consult your Windows or modem documentation.

Setting the modem speaker volume

One feature found within *Modem Properties* that you may want to access periodically is the modem speaker volume control. To set the speaker volume:

1. Click **Configure...** on the *Configure Modem* screen to bring up the *Modem Properties* screen.
2. On the *Modem Properties* screen, adjust the speaker volume slider (**Figure 4**) to the desired level.

Figure 4
Setting the speaker volume



Setting System Parameters

A final configuration screen allows you to set up several general parameters governing connection to AWOS stations. These are primarily timing functions that are useful in fine-tuning RMM for reliable connection. The *System Parameters* screen (**Figure 5**) is divided into two panels: The **General** panel lets you set the length of time to wait before attempting to send RMM commands to the station, and to set the maximum length of time to wait for a response from the AWOS before declaring a time-out condition; the **Auto-Dial Parameters** panel lets you change settings specific to auto-dial sessions, and to turn auto-dialing on or off.

General Parameters

The settings found in the *System Parameters General* panel let you:

- Set the time delay between initiation of dialing and sending of the command for the AWOS to enter RMM mode

This can be set to any value between 10 and 60 seconds. The default setting is 20 seconds. This has been found to be a reliable setting for most installations, allowing sufficient time for a connection to be made before entering RMM mode. In rare cases (where the time required to make a connection is especially long) this may need to be set to a higher value. Be cautious, however,

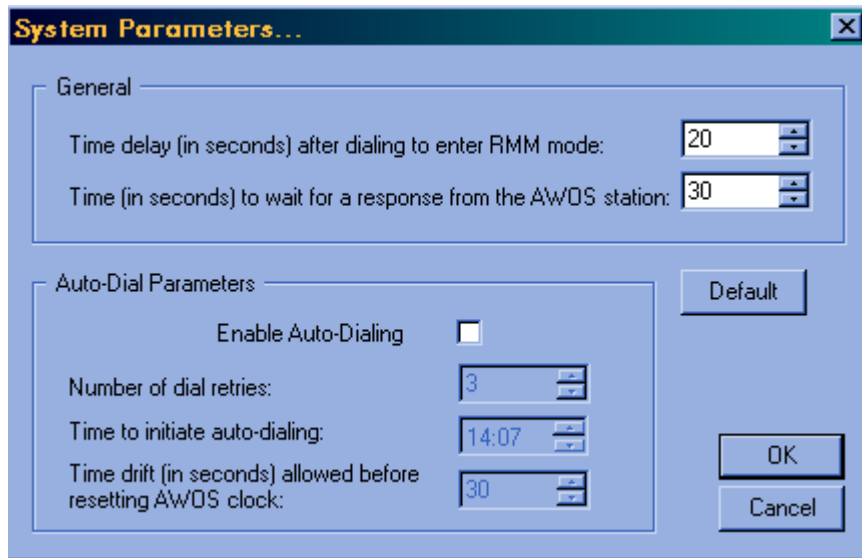


Figure 5
System Parameters screen

about setting it to a lower value, since this may not allow enough time for a successful connection to be established.

- Set the maximum amount of time to wait for a response from the AWOS before declaring a time-out condition and disconnecting

This can be set to any value between 5 and 60 seconds. The default value for this setting is 30 seconds. This can be set to a higher value if an AWOS repeatedly fails to respond to an RMM command within the allotted time. It can also be set to a lower value, but it is recommended to leave some margin and not try to set this value too tight. The response time from an AWOS station is normally around 5 seconds, but factors beyond the software's control can sometimes cause transmission times to be slowed. Leaving this set to a higher value will not delay connection or affect processing in any way. It simply sets a time limit for connection, so that the RMM program does not wait indefinitely.

Auto-Dial Parameters

The settings found in the *System Parameters Auto-Dial Parameters* panel let you:

- Enable auto-dialing

Click this box to enable (box checked) or disable (box unchecked) the RMM Auto-Dial feature.

When this box is checked, the other options in this panel become active, enabling you to change

any of the auto-dial parameters. When the box is unchecked, the auto-dial parameters are inactive (grayed-out).

- Set the number of auto-dial retries

When an auto-dial connection attempt fails, the RMM program will attempt to redial the station as many times as specified in this field after first dialing all the other sites on the site list. This is done in an attempt to contact a site whose telephone line was busy on the first attempt.

- Set the auto-dial start time

Auto-dialing can be set to start automatically at any time. Enter the start time value in 24-hour format (22:00, for instance, denotes 10 pm), either by typing the desired time or by clicking the up or down arrows to the right of the box. Clicking the up arrow will increment the time, while clicking the down arrow decrements it. (To change the time rapidly using the arrows, hold the mouse button down.)

The auto-dial start time is used as the start time for all downloads during an auto-dial session, even though a specific site may not actually be dialed until some time later.

- Set the time difference allowed between the RMM computer and the remote station's clock before resetting the remote station's clock

Set this value to the amount of time discrepancy (from 5-60 seconds) that you want to allow between the AWOS's clock and the RMM computer's clock. One of the functions of RMM is to check the remote AWOS's clock and, if the clock has drifted, to reset the time to match the RMM computer's clock. In order for this function to work effectively, the RMM computer's clock must be set to the correct Zulu time (UTC) before each auto-dial session. This will ensure that an inaccurate PC clock does not cause the AWOS's clock to be set to the wrong time. We recommend using a program called **Automated Computer Time Service (ACTS)**, available from the NIST Atomic Clock web site in Boulder, Colorado (<http://www.bldrdoc.gov/timefreq/service/acts.htm>) to automatically set the RMM computer's clock to the current UTC time.

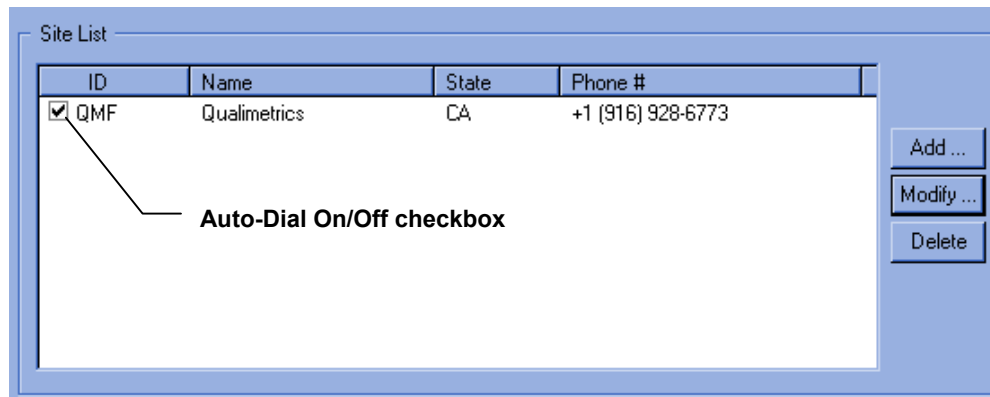
The RMM Site List

Creating a Site List

The most common use of RMM is to call a list of AWOS sites automatically each day to check operation of the sites. The first step in automating RMM functions, then, is creating this list of sites.

The top portion of the main screen shows the site list and provides the three buttons (*Add*, *Modify*, and *Delete*) used in creating and editing the list (see **Figure 6**).

Figure 6
Site List



To create a new site entry:

- 1 Click the *Add...* button to the right of the site list window. The *Add New Site* screen (**Figure 7**) will be displayed.
- 2 The cursor will automatically be positioned in the **ID** text entry box in the **Identifier** panel of the *Add New Site* screen. You may immediately begin entering the three-to-four character Site ID in the box.
- 3 After entering the Site ID, hit the Tab key on the keyboard to move the cursor to the **Name** box.
- 4 Enter a name to identify the site, using up to 31 characters.
- 5 Hit the Tab key to move the cursor to the **State** box.
- 6 Enter the two-letter abbreviation for the state in which the AWOS is located.
- 7 The lower panel on the *Add New Site* screen (**Number To Call**) is used to enter the AWOS site's RMM telephone number. The first field in the panel, the checkbox labeled **Use dialing rules**, is checked by default. When this box is checked, the country code, area code,

and other dialing options (such as outside line access number, etc) specified in the modem's Dialing Properties (*see page 6*) will be included automatically in the dialing string for the site. When the box is unchecked, the *Country* and *Area Code* boxes will be grayed out and these (along with any other preliminary numbers) will need to be entered manually with the phone number.

- To uncheck the box, simply click it. Click again to restore the checkmark.

Figure 7
Add New Site screen

- 8 The **Country** specified in the next box determines the country code to be used when dialing the site with **Use dialing rules** enabled. (This box will be grayed out when the **Use dialing rules** box is unchecked.) The selection defaults to United States of America (1).
 - To select a different country, click the arrow to the right of the **Country** box, and select a country from the drop-down list.
- 9 Click in the **Area Code** box to place the cursor there, and enter the area code of the AWOS site, if necessary. (This box will be grayed out when the **Use dialing rules** box is unchecked.)
- 10 Hit Tab to move the cursor to the **Phone Number** box.

- 11 Enter the phone number of the site. If the **Use dialing rules** box is unchecked, you will have to enter the number in its entirety, including area code (if necessary) and any other preliminary numbers (outside line access, etc.).
- 12 To enable this site for auto-dialing, click the checkbox labeled *Tag this site for automatic dialing*. This selection can be changed at any time from the main screen by checking or unchecking the Auto-Dial On/Off checkbox for that site (found at the start of the site's entry on the site list—see **Figure 6**). A checkmark enables auto-dialing, an unchecked box omits the site from auto-dial sessions.
- 13 When all the information is entered and correct, click *OK*. You will be returned to the main screen, and the new site will be added to the site list. To exit without saving the information and without adding the site to the list, click *Cancel*.

Editing the Site List

The site list can be edited at any time using the *Modify* and *Delete* buttons, found to the right of the site list on the main screen. To edit or delete a site from the list:

- 1 Click the site ID on the site list to highlight it.
- 2 To edit the site, click the *Modify* button. The *Modify Site* screen will appear. This screen contains the same fields as the *Add New Site* screen, and shows the current settings for the selected site.
- 3 Change any of the settings by clicking in the desired text box and editing the information as necessary. When the information is correct, click *OK* to return to the main screen. The new information will be shown in the site's entry on the site list.
- 4 To delete a site, click *Delete*. An alert screen will be displayed asking you to confirm that you want to delete the site from the list. If you do, click *Yes* to delete the site. To return to the main screen without deleting the site, click *No*.

Sorting the Site List

By default, the site list is sorted based on the Site ID, in ascending alphabetical order (A, B, C, etc.). The sorting method can be changed at any time by clicking any of the column headings on the site list (**ID**, **Name**, **State**, or **Phone Number**). Clicking a heading will cause the entries to be sorted by that field in ascending order. Clicking the same heading a second time will sort the

entries in *descending* order (Z, Y, X, etc.). The order in which the sites are sorted is also used as the dialing order in auto-dial mode.

Copying the Site List to Another Computer

If several locations will be using the same or very similar site lists, the site information does not need to be manually entered at each location. It can be entered once at a single location, and the master site file can then be copied to other RMM computers and edited as necessary. To do this:

- 1** Using Windows Explorer or a similar file handling utility, locate the file "**rmmsites.cfg**", in the main directory (specified during installation, the default is **Rmm**), and copy it to a removable disk.
- 2** Copy the "**rmmsites.cfg**" file from the removable disk to the main directory of any other RMM computer to duplicate the original site list. (*Note: This will replace the existing site list on the target computer.*)
- 3** Edit the list as necessary as explained in ***Editing the Site List*** above.

Using RMM

Automatic and Manual Dialing

The most common use of RMM is to call a list of AWOS sites automatically each day to check operation of the sites. During an auto-dial session status information, configuration information, current data, and error logs are collected for each site and saved to the RMM computer's hard disk. When necessary—when RMM could not contact a station during auto-dial, for instance—stations can be manually dialed using the RMM software. A series of remote functions are available during manual dialing that allow the user to collect a full set of information for the site, as well as to change configuration settings and investigate reported errors.

Enabling Auto-Dialing

Enabling auto-dialing involves two steps:

- 1 Enabling auto-dialing for each site
- 2 Enabling system-wide auto-dialing and setting the auto-dial parameters

Enabling Auto-Dialing for Sites

To enable a site for auto-dialing, its Auto-Dial On/Off checkbox (*see Figure 6*) on the site list must be checked. To disable auto-dialing for a site, uncheck this box. You can also enable or disable auto-dialing for a site using the *Tag this site for automatic dialing* option when creating or editing a site.

Enabling System Auto-Dialing and Setting the Auto-Dial Parameters

Before the sites enabled for auto-dialing can be automatically dialed, system-wide auto-dialing must be enabled and the auto-dial parameters set. This is done through the *System Parameters* screen (*Figure 5*), found on the *C*onfiguration menu.

- 1 From the *C*onfiguration menu, select *S*ystem *P*arameters.
- 2 Enable auto-dialing by checking the **Enable Auto-Dialing** checkbox in the **Auto-Dial Parameters** panel of the *System Parameters* screen.

- 3 If you have not already done so, set the auto-dial parameters as required for your location. (Refer to the **Auto-Dial Parameters** section of the *RMM Setup* chapter of this manual for detailed explanations of these options.)

Auto-Dialing Sessions

(Note: When connecting to a site, the voice broadcast will be heard until, after a few seconds, the modems establish a connection.)

During an RMM auto-dial session, several things happen:

- A log of all errors reported over the past two days is downloaded from the site and saved to the RMM computer's hard disk.
- A copy of the one-minute data for the past two days is saved in a file in the same format as the AWOS printer output.

Note: It may take up to 10 minutes per site to download all the data files.

- The station's status report is checked for errors since the last status reset, and all detected errors are compiled in the Error Summary Report.
- The status report is reset.
- The time and date registered on the AWOS clock is synchronized to the RMM computer's clock.
- The site's configuration file is checked, and if it has changed since the last RMM download, a copy of the new configuration is downloaded.

Several files are created during the session and are saved to the RMM computer's hard disk.

These files can be divided into two groups: Session Files and Site Files.

Viewing Files

Session Files and Site Files are normally opened automatically by either Notepad or Wordpad (utilities included with Windows) after being selected from the file list as described in the following sections. If desired, these files can also be opened as text files in Microsoft Word or another word processing application. To open a file:

- 1 Select **Open** from the application's pull-down menu (normally the **F**ile menu).
- 2 Navigate through the file list to the directory containing the desired file (see page 3 for file locations).

- 3 In the "files of type" box on the file list screen, select "All Files (*.*)".
- 4 Highlight the desired file, then click **Open**. The file naming convention for each type of file is explained in the section below covering that type of file (*Call Summary Report*, *Error Summary Report*, *ERRLOG* file, or *PRINTER* file).

Session Files

Session Files collate the results of an entire auto-dial session into a single file, and contain information on each of the sites dialed. Two Session Files are created during each auto-dial session:

- *Call Summary Report*
- *Error Summary Report*

These files can be opened using the **File** menu's **View** ▶ option.

Call Summary Report

The Call Summary Report (**Figure 8**) shows the results of the auto-dial session, indicating which of the sites was successfully reached, and which (if any) could not be reached. If a site could not be reached, you will generally want to dial that site manually and download the collected information using the **Manual Operation** menu commands.

| CALL SUMMARY REPORT | | | | | | | | | |
|--|---------|-------------|------------|-------------|--------------|-------------|-------------|--------|-------|
| Jan. 21, 2000 | | | | | | | | | |
| Retrieved Information | | | | | | | | | |
| ----- | | | | | | | | | |
| Status Report Config Report Prntr/Errlog | | | | | | | | | |
| ===== | | | | | | | | | |
| # of | | | | | | | | | |
| Rtrvl Error | | | | | | | | | |
| Time | Site ID | Call Status | Update D/T | Rtrvl Error | Errors Found | Rtrvl Error | Data Mod'ed | Ystrdy | Today |
| ----- | | | | | | | | | |
| 23:31 | KAOS | CONNECT | | | 13 | | | | |
| 23:36 | QMF | CONNECT | | | 16 | | | | |
| 23:42 | QMF3 | CONNECT | | | | | | | |
| 23:48 | KMCC | CONNECT | | | | | | | |
| 23:54 | PAVD | CONNECT | | | 10 | | | E | P/E |

Figure 8 Call Summary Report

The Call Summary Report is automatically saved in the **Reports** subdirectory of the main directory, and named according to the date collected (month, two-digit day, and two-digit year), with the extension ".CSR" (for Call Summary Report). As an example, the file "**Jan0400.CSR**" would be the Call Summary Report for January 04, 2000.

To view the Call Summary Report:

- 1 From the main screen's **F**ile menu, select **V**iew ▶ **C**all Summary Reports.
- 2 A file list will open in the **Reports** directory showing a list of all saved Call Summary Reports.
- 3 Select the desired file, highlight it, and click **O**pen. Double-clicking the file name will also open it.
- 4 The file will be opened in the Notepad application, if size permits. If the file is too large to be opened by Notepad, a prompt will appear asking if you want to use Wordpad to open the file. Click **Y**es.

Interpreting the Call Summary Report

The Call Summary Report is organized in a tabular format, and summarizes the results of the RMM session for each site dialed.

Time shows the time at which the site was dialed.

Site ID is the AWOS site ID of the site dialed.

Call Status indicates whether a successful connection was made, and reads either CONNECT or one of the following messages. If any of these messages is shown, the site should be dialed manually.

BUSY indicates a busy signal was received from the site and no connection was made.

NOANSWER indicates that the site did not respond, no carrier was detected.

DISCONNECT will be shown if the call was disrupted during the RMM session.

NOMODEMAVAIL is shown if the RMM computer could not detect its modem. If this message is received, check the modem setup using the **M**odem... option on the **C**onfiguration menu.

Update D/T indicates whether the site's date and/or time was updated to correspond with the RMM computer's clock. If **T** is shown, the AWOS clock differed from the RMM

computer's clock by at least the amount specified in the **Time drift** field on the *System Parameters* screen, and the AWOS clock was reset. If **D** is shown, the AWOS's date was changed to agree with the RMM computer's. If both the date and time were changed, **D/T** will be shown. If neither the date nor time was changed, the field will be blank.

The remaining fields in the report provide information on retrieved information (Status Report, Configuration Report, PRINTER file, and ERRLOG file).

Status Report: The first two Retrieved Information fields concern the Status Report:

Rtrvl Error will show an **S** if there was an error retrieving the Status Report. If the data was retrieved successfully, the field will be blank. When an error is reported, you will usually want to dial the site manually to download the status information.

of Errors Found shows the total number of errors reported for the site since the last status reset. This number will agree with the number of errors shown in the Error Summary Report.

Config Report: The next two Retrieved Information fields concern the Config Report, which is a check of the site's configuration file. This file contains the AWOS site's basic configuration information, including Site ID, Magnetic Declination, BP Sensor Offsets, and other parameters. RMM checks this configuration file to see whether it has changed since the last RMM session. If the file has changed, the RMM software will download the new configuration and save it in the site's dedicated directory (for example, **Rmm\QMF**) as "**current.cfg**". It will save the old configuration in the file "**previous.cfg**". When the Configuration Report shows the configuration as having changed, these two files can be compared to see what changes were made.

Rtrvl Error will show a **C** if there was an error retrieving the Configuration Report. If the data was retrieved successfully, the field will be blank. When an error is reported, you may want to dial the site manually to verify that the site's configuration has not changed unexpectedly.

Data Mod'ed will show **CfgMod** if the site's configuration file has been changed since the last RMM session. If the file was not changed, the field will be blank. When the configuration file has changed, you can compare the old ("**previous.cfg**") and new ("**current.cfg**") configurations to see what has changed using the **File** menu's **View ▶ Other Files** command.

- 1 Click the desired site on the site list to highlight it.
- 2 From the main screen's **F**ile menu, select **V**iew ▶ **O**ther Files.
- 3 A file list will open in the selected site's directory. Select the "**current.cfg**" file, highlight it, and click **O**pen. Double-clicking the file name will also open it. The file will be opened in the Notepad application.
- 4 Print the file.
- 5 Again go to the main screen's **F**ile menu and select **V**iew ▶ **O**ther Files.
- 6 Navigate to the site's directory and locate the file "**previous.cfg**".
- 7 Open the file.
- 8 Print the file and compare it to "**current.cfg**".

Prntr/Errlog: The final two Retrieved Information fields show retrieval errors for the PRINTER and ERRLOG files. These two files contain error and sensor data from the previous two days. The first column shows any errors in retrieving the files for the first day (**Ystrdy**) and the second column shows any errors in retrieving the files for the second day (**Today**).

- If an error occurred retrieving the PRINTER file, **P** will be shown.
- If an error occurred retrieving the ERRLOG file, **E** will be shown.
- If an error occurred retrieving both the PRINTER and ERRLOG files, **P/E** will be shown.
- If no errors occurred the columns will be blank.

Usage Tips

- Examine the Call Summary Report following every auto-dial session. If any sites could not be reached, dial them manually using the **Manual Operation** menu commands.
- A quick glance at the Call Summary Report will tell you which sites reported errors, so you will likely only need to view the ERRLOGs for those sites.
- If a Status Report retrieval error is reported, you can dial the site manually to retrieve the information.
- If a Configuration Report retrieval error is reported, you may want to dial the site manually to check that the configuration file has not changed unexpectedly.
- If the configuration file is reported as having changed, compare the **current.cfg** and **previous.cfg** files in the site's directory to see what the changes were.

Error Summary Report

The Error Summary Report (**Figure 9**) shows a summary of the reported errors for all the sites dialed, and is useful for quickly scanning for any potential problems. For a more detailed history of a specific site's operation, refer to the site's ERRLOG file.

The data in the Error Summary Report represents all errors reported since the last status reset. A status reset is triggered automatically by an auto-dial session, or it can be initiated manually using the **Manual Operation** menu options.

The Error Summary Report is automatically saved in the **Reports** subdirectory of the main directory, and named according to the date collected (month, two-digit day, and two-digit year), with the extension ".ESR" (for Error Summary Report). As an example, the file "**Jan0400.ESR**" would be the Error Summary Report for January 04, 2000.

| ERROR SUMMARY REPORT | | |
|----------------------|---------|---|
| Jan. 21, 2000 | | |
| Time | Site ID | Errors Detected |
| ----- | | |
| 23:31 | KAOS | Status accumulated since 01/20/2000 23:31 Minutes of no DCP comm = 135 Hours of no ADAS comm = 24 WS Missing = 255 minutes WD Missing = 255 minutes TP Missing = 491 minutes DP Missing = 491 minutes BP Missing = 221 minutes BP Temp/Min/Max (F): 105 / 0 / 110 UI Missing = 5 minutes CH Missing = 1323 minutes LTX Missing = 1440 minutes CHI: NotReporting ADAS: NoAldars 0M0notSent |
| 23:36 | QMF | Status accumulated since 01/20/2000 23:40 Minutes of no DCP comm = 1436 Hours of no ADAS comm = 24 WS Missing = 1436 minutes WD Missing = 1436 minutes TP Missing = 1436 minutes DP Missing = 1436 minutes BP Missing = 1436 minutes BP Temp/Min/Max (F): 0 / 0 / 0 UI Missing = 1436 minutes CH Missing = 1436 minutes LTX Missing = 1436 minutes Day/Night Changes = 0 DCP: NotReporting |

Figure 9 Error Summary Report

To view the Error Summary Report:

- 1 From the main screen's **File** menu, select **View ▶ Error Summary Reports**.
- 2 A file list will open in the **Reports** directory showing a list of all saved Error Summary Reports.
- 3 Select the desired file, highlight it, and click **Open**. Double-clicking the file name will also open it.
- 4 The file will be opened in the Notepad application, if size permits. If the file is too large to be opened by Notepad, a prompt will appear asking if you want to use Wordpad to open the file. Click **Yes**.

Interpreting the Error Summary Report

The Error Summary Report contains status information for all the sites dialed. Each site's report is tagged by the time at which the report was generated (time of RMM connection to that site) and the Site ID. Any of the following messages may be displayed.

Status accumulated since shows the time at which the displayed status information began accumulating. This is also the time of the last status reset.

Minutes of no DCP comm shows the amount of time during which there was no communication between the CDP and DCP.

DCP Comm CRC Errors shows the percentage of communication errors recorded for packets transmitted from the DCP to the CDP. A percentage greater than 5% indicates a communication problem that should be investigated.

Hours of no ADAS comm shows the amount of time during which there was no communication between the CDP and ADAS.

Restarts shows the number of times the DCP and/or CDP have been restarted since the data began accumulating.

CDP shows the amount of time during which the CDP was in any of these modes: Test Mode, Inoperative Mode, or Manual Mode.

Sensor Missing--a missing entry is included for any installed sensor that has been reported as missing during the period covered by the report,. The entry shows the total amount of time over which the sensor was reported as missing since the data began accumulating. The BP Sensor entry also includes the reported current temperature at the sensors, along with the

minimum and maximum reported temperatures.

Day/Night Changes will only be shown when no Day/Night changes have been reported since the last status reset.

DCP: If DCP errors have been reported, any of the following error messages may be displayed:

Not Reporting

Restart

MaintSw

0Vref

2.5Vref

5Vref

FanFail

ROMerr

RAMerr

WDRefHi

WDRefLo

NoComm (followed by the name of the sensor—Vis or Chi—with which there is a communication problem)

VIS: If visibility sensor errors have been reported, any of the following messages may be shown:

Not Reporting

Config-Error

3-Hd-Op (8364-E only)

Dirty-Windows

Data-Misg

NVRam

Mode0Dir

Mode0Ind

Mode1Dir

Mode1Ind

E0

E1

D0

D1

CrossChk

E0-Heater

E1-Heater

D0-Heater

D1-Heater

Aux-Heater

CtlrPwrSup

CHI: If ceilometer errors have been reported, any of the following error messages may be shown:

Mode Error
LOW TX PWR
UNBAL DETECTO
OFFSET IN DETECTOR
REF VOLT ERR
ZERO PT FAIL
HI CURR IN S BRD
HI CURR IN M BRD
HI CURR IN H BRD
VOLT FAIL +24V
VOLT FAIL +5V
VOLT FAIL +15V
VOLT FAIL -15V
VOLT FAIL +230
VOLT FAIL +10V
VOLT FAIL -10V
ADC FAIL IN H BRD
RX HI VOLT FAIL
TEMP FAIL
OVERHEAT
OUT PWR FAIL
LASER CIR CHRGE FAIL
IPEAK CIRC ERROR
LASER HV REG FAIL
IPEAK CURR ERROR
LASER HV REG FAIL
LASER HV CIRC FAIL
RECVR FAIL
DET FAIL
ADDR FAUL S BRD
ADDR FAULT H BRD
LPF MISSING
SYNC MISSING
LASER TRIGGER FAIL
MASTR SLAV COM FAIL
RESET
NotReporting

ADAS: If an ADAS error has occurred, any of the following error messages may be shown:

DiscMode—this means no SNRM was received from ADAS since a CDP restart; the poll code may be incorrect, or there may be an ADAS communication problem: check “hours of no ADAS comm” entry
NoALDARS—this means no lightning data has been received from ADAS
OMOnotSent (one-minute message not sent)—this can occur when ADAS does not

ask for the one-minute message, or if there is an intermittent communications problem

HdlcConfigErr—HDLC card internal error, firmware or hardware fault

HdlcH/Werr—HDLC card internal error, firmware or hardware fault

HdlcXmitErr—HDLC card internal error, firmware or hardware fault

CDP: If CDP errors have been reported, any of the following error messages may be shown:

VoiceCardErr

ArchiveError

DiskError

Usage Tips

- Examine the Error Summary Report following every auto-dial session for a summary of all the errors reported for all the sites since the last RMM session. For sites showing many errors, go to the ERRLOG for that site to examine it more closely.
- When sensors are reported missing, check whether any CDP restarts have occurred. Sensors will be reported missing for a length of time following a restart, with the length of time varying depending on the sensor. The wind speed and direction sensors will be missing for only 2-3 minutes, for instance, while the ceilometer will go missing for about 20 minutes with each restart.

Site Files

Site Files contain information for a single site only. Four Site Files are created for each site during an auto-dial session:

- *ERRLOG* file for yesterday
- *ERRLOG* file for today
- *PRINTER* file for yesterday
- *PRINTER* file for today

These files can be opened using the **File** menu's **View ▶ Archived Files ▶** option.

ERRLOG

The ERRLOG files provide a detailed record of reported errors for a single selected site. Each file consists of error reports generated every twenty minutes for one day starting at 00:00. The ERRLOG files are automatically saved in the **Errlog** subdirectory of the site's dedicated directory.

To view the ERRLOG for a site:

- 1 Click the site's name on the site list to select it. (The ERRLOG viewing option below will not be available unless a site is selected.)
- 2 From the main screen's **F**ile menu, select **V**iew ▶ **A**rchived Files ▶ **E**RRLOG.
- 3 A file list will open in the site's **Errlog** directory showing a list of all saved ERRLOGs for the selected site. The files are named by the date collected (month, two-digit day, and two-digit year). As an example, the file "**Jan0400**" would be the ERRLOG for January 04, 2000.
- 4 Select the desired file, highlight it, and click **O**pen. Double-clicking the file name will also open it.
- 5 The file will be opened in the Notepad application, if size permits. If the file is too large to be opened by Notepad, a prompt will appear asking if you want to use Wordpad to open the file. Click **Y**es.

Interpreting the ERRLOG

The ERRLOG file (**Figure 10**) is divided into separate entries collected at 20-minute intervals, each of which contains a catalogue of status messages concerning the site's operation. The first line of each entry shows the time at which the data was collected, followed by the latest status message (refer to the *AWOS CDP User's Manual* to decode this message) and the AWOS's operational mode. The status messages that follow this header are described below.

Last System Restart shows the date and time the CDP was last restarted.

Last DCP Restart shows the date and time the DCP was last restarted.

Last DCP Maint Sw shows the date and time the DCP maintenance switch was last pressed.

Comm shows the current status of the communication link to the DCP; should normally read "OK".

Telephone call counter shows the number of incoming calls (both voice and RMM) received.

HDLC Data Link shows the HDLC link's status (OK or error), mode (Disconnect or Normal), transmissions sent (weather data), and transmissions received (lightning data).

Day/Night shows the current state reported by the Day/Night Sensor. If a Day/Night sensor error has been detected, **Day-night sensor error** will be shown.

Five second DCP data shows the instantaneous data received from the DCP before processing by the CDP.

One minute processed data shows the most recent one-minute data after processing by the CDP.

Usage Tips

- Use the ERRLOG to examine the history of reported errors to differentiate between intermittent operation and failure of a sensor or component.

PRINTER

The PRINTER file contains one-minute data reports for a single selected site. The data is in the same format as that output to the AWOS CDP printer, and consists of a compilation of one-minute data records for one day beginning at 00:00. The PRINTER files are automatically saved in the **Printer** subdirectory of the site's dedicated directory.

To view the PRINTER file for a site:

- 6 Click the site's name on the site list to select it. (The PRINTER viewing option below will not be available unless a site is selected.)
- 7 From the main screen's **F**ile menu, select **V**iew ▶ **A**rchived Files ▶ **P**RINTER.
- 8 A file list will open in the site's **Printer** directory showing a list of all saved PRINTER files for the selected site. The files are named by the date collected (month, two-digit day, and two-digit year). As an example, the file "**Jan0400**" would be the PRINTER file for January 04, 2000.
- 9 Select the desired file, highlight it, and click **O**pen. Double-clicking the file name will also open it.
- 10 The file will be opened in the Notepad application, if size permits. If the file is too large to be opened by Notepad, a prompt will appear asking if you want to use Wordpad to open the file. Click **Y**es.

Interpreting the PRINTER File

The PRINTER file is essentially a duplicate of the data output to the AWOS CDP's printer at the site, and may be a large file. Each one-minute data record within the file is contained on a single line, and includes the following information. (*Note that some information will not be displayed if the sensor is not installed at the site.*)

- Airport Identifier
- Julian Day
- Zulu Time (HHMM)
- Wind Direction/Speed and Gust (degrees magnetic and knots)
- Visibility (statute miles, if 836x series sensor is installed)
- Lightning at airport or in vicinity (TS or VCTS, if lightning data available from ALDARS)
- Sky Condition (if 8329-A ceilometer is installed)
- Temperature/Dew Point Temperature (Celsius)
- Altimeter Setting (inches of Mercury)
- Density Altitude (feet, only if ≥ 1000 feet above airport elevation)
- Variable Visibility (statute miles, if 836x series visibility sensor is installed)
- Variable Wind Direction (magnetic degrees)
- Precipitation Accumulation
- Day/Night sensor output
- Lightning Remark (requires lightning information input from ALDARS)
- System status codes

Usage Tips

- If a sensor malfunction is suspected, use the PRINTER file to compare the values reported by the sensor over time. If the values do not change as they should, or if they change erratically, the sensor may need to be checked in the field.

Manual Dialing

Manual Dialing provides a backup dialing method for the customary auto-dial method, and provides a way to perform RMM functions outside the regular schedule of auto-dial sessions. It allows spot-checking of individual sites where problems are suspected, and provides a series of maintenance and configuration functions that can be carried out remotely at any time.

To manually dial a site:

- 1** Highlight the site on the site list that you want to call. If you want to call a site that is not part of the site list, go directly to **step 2**.
- 2** Select **Dial...** from the **Manual Operation** menu.
- 3** The *Dialing Options* screen will appear. This screen is identical to the *Configure Modem* screen (*see page 5*), but with the **Calling** panel active. If you are calling a site selected from the site list, all the necessary dialing information will be filled in automatically. If you are calling a site not shown on the site list, fill in the necessary dialing information. To use the dialing preferences specified earlier through the *Dialing Properties* screen (*see page 5*), make sure the **Use dialing rules** checkbox is checked. Unchecking this box will disable the **Country** and **Area Code** fields, and you will have to enter the complete phone number directly in the **Phone Number** field (including "9," for an outside line (if necessary), the country code, area code, and phone number).
- 4** Click **Dial** to dial the number. (*Note: When connecting to a site, the voice broadcast will be heard until, after a few seconds, the modems establish a connection.*)
- 5** As the call is being made, status messages will appear at the bottom of the main screen. Once a connection is made (or if it fails), a message will be displayed in the text buffer (*see Figure 1*) that makes up the lower half of the main screen. This text buffer is where all responses from the AWOS are displayed during manual dialing.

Once a connection has been made, you can perform any of the remote functions discussed in the following sections.

Remote Functions

The functions available during RMM manual dialing are accessed from the **Manual Operation** menu's **Remote Functions...** option. Selecting this option calls up the *RMM Functions* screen (Figure 11).

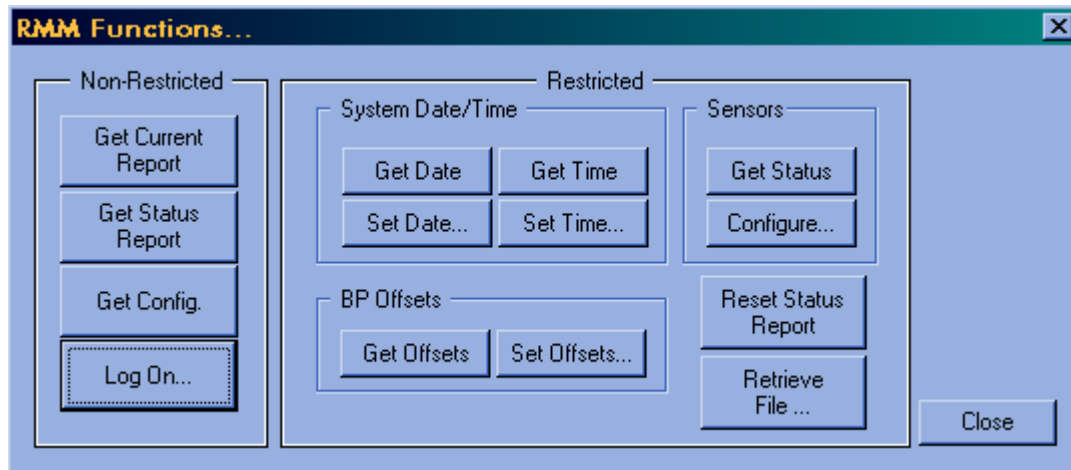


Figure 11
RMM Functions
screen

The *RMM Functions* screen is divided into two panels: **Non-Restricted** functions and **Restricted** functions.

Non-Restricted Functions

The Non-Restricted functions allow you to view the current sensor data, the current status report, and the current configuration. Selecting any of these options will display the requested data in the main screen's text buffer. You can also reset the status report from this panel. None of the AWOS's operational settings (configuration, date, time, BP offsets), however, can be changed using these functions; to do that requires password access to the Restricted functions (via the **Log On...** button).

Get Current Report

Get Current
Report

Get Current Report displays the most recent one-minute data message in the text buffer. This message follows the same format as the PRINTER file. Refer to the description of the PRINTER file (page 29) for the meaning of each of the fields shown in the message.

Get Status Report

A blue rectangular button with the text "Get Status Report" in white.

Get Status Report displays the most recent Status Report in the text buffer. The Status Report shows the current status of the site, and combines elements of the Error Summary Report and the ERRLOG file. Refer to those two sections (**pages 21 through 28**) for a description of each of the status fields shown.

Get Config.

A blue rectangular button with the text "Get Config." in white.

Clicking **Get Config.** will display the current configuration of the AWOS in the text buffer. The displayed information includes:

- Station Name
- Airport ID
- AWOS type
- Site configuration
- Field elevation, feet above MSL
- BP sensor elevation(s), feet above MSL
- Magnetic deviation
- Runway number(s) where DCP(s) installed
- BP sensor offsets, inHg x 1000
- HDLC hex address (ADAS link)
- CDP software version number

Log On

A blue rectangular button with the text "Log On..." in white.

The **Log On** button calls up a user logon screen for accessing the Restricted Functions. Enter your password in the *Password* box, and click **OK** to activate the Restricted Functions.

Restricted Functions

Once you have entered your password at the *RMM Functions* screen as explained above (*see Log On*), the buttons in the **Restricted Functions** panel become active. These buttons allow you to view data, to download data, and to change certain of the AWOS's operating parameters.

System Date/Time

The buttons in the **System Date/Time** panel let you check or set the date and time on the AWOS CDP clock.

Get Date

Displays the current date (as registered by the AWOS CDP) in the text buffer.

Set Date...

Calls up a screen allowing you to reset the date on the AWOS CDP.

- 1 At the *Set Date* screen, enter the new date you want the AWOS CDP's clock to read.
- 2 Click **OK** to confirm the new date and set the AWOS CDP clock..

Get Time

Displays the current time (as registered by the AWOS CDP) in the text buffer.

Set Time...

Calls up a screen allowing you to reset the time on the AWOS CDP.

- 3 At the *Set Date* screen, enter the new time you want the AWOS CDP's clock to read.
- 4 Click **OK** to confirm the new time and set the AWOS CDP clock..

Sensors

The **Sensors** panel contains two buttons that let you check the sensor on/off configuration (**Get Status**) and turn sensors on or off (**Configure...**). The VHF radio voice output can also be turned on or off using this function.

Get Status

Displays the current sensor on/off configuration in the text buffer.

Configure...

Calls up a screen (**Figure 12**) allowing you to set the on/off status of sensors at the site. This *Set Sensors...* screen shows a list of all the sensors installed at the site, along with the choices "On-Line" and "Off-Line" in the screen's upper panel. To set any of the listed sensors on-line or off-line, follow the steps below.

- 5 In the **Sensor:** panel, click the desired sensor to highlight it. Note that the VHF Radio Voice is one of the available selections, allowing you to turn the voice radio output on or off remotely.
- 6 To set the on-line or of-line state of the sensor, click the appropriate choice in the **Set:** panel.
- 7 Click **OK** to set the sensor's state to the new setting. To exit without changing the sensor's state, click **Cancel**.
- 8 Only one sensor at a time can be configured through the *Set Sensor...* screen. To configure another sensor, select **Configure...** again from the *RMM Functions* screen and repeat the above steps.

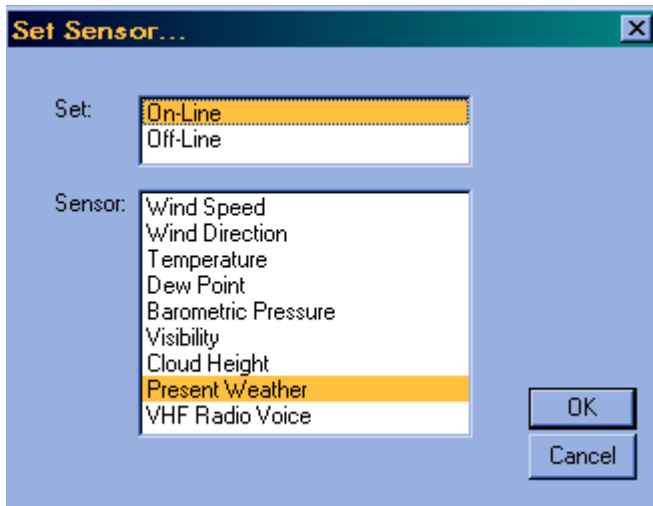


Figure 12
Set Sensor On/Off screen

BP Offsets

The **BP Offsets** panel contains two buttons that let you check the barometric pressure sensors' offset values (**Get Offsets**) and change those values (**Set Offsets...**).



Displays the barometric pressure sensors' current offset values in the text buffer.



Calls up a screen (**Figure 13**) allowing you to set the barometric pressure sensors' offset values. This *Set Offsets...* screen provides two input boxes, one for BP Sensor 1, and one for BP Sensor 2. To enter an offset value for either of the sensors, follow the steps below.

- 1 Click to place the cursor in the appropriate input box (BP1 or BP2).

- 2 The default offset is 0, which is automatically entered in both input boxes. To enter a new value, delete the 0 and enter the new value.
- 3 Click **OK** to set the sensors' offsets to the new values. To exit without changing the offsets, click **Cancel**.

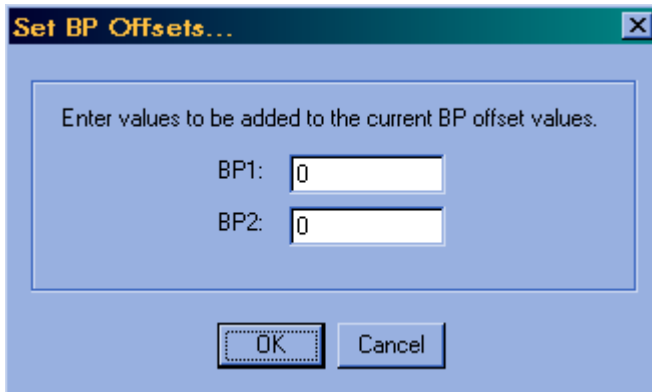


Figure 13
Set BP Offsets screen

Reset Status Report



Clicking **Reset Status Report** will reset all the status flags, and status will begin accumulating anew. In subsequent status reports, the *Status accumulated since* field will show the time of this reset. Before resetting the status report, be sure that any reported errors have been noted and investigated.

Retrieve Files



The final of the Restricted Functions options is **Retrieve File...** This option allows you to retrieve two types of files that are normally retrieved during an auto-dial session: The *ERRLOG* file contains status information compiled at twenty-minute intervals; the *PRINTER* file contains the accumulated one-minute weather data records. For detailed explanations of the content of these two files, refer to *ERRLOG* on page 26, and *PRINTER* on page 29.

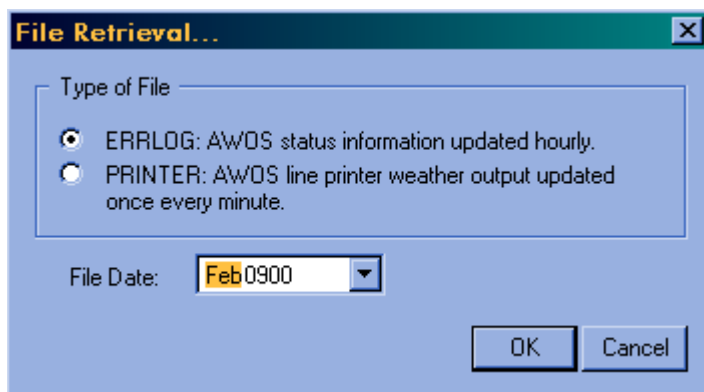


Figure 14
File Retrieval screen

To retrieve either of these files, follow the steps below.

- 1 Click the radio button to the left of the file you want to retrieve to select it.
- 2 Enter the date for which you want to retrieve data. To do this, click the arrow to the right of the **File Date:** input box. A calendar will appear, with today's date circled and selected. To select a different day, click the desired day on the calendar. To move to a different month, click the arrows in either upper corner of the calendar. The left arrow will call up the previous month's calendar; the right arrow will call up the next month's calendar.
- 3 Click **OK** to begin the download.
- 4 Once the download is complete, an alert window will appear telling you the name of the saved file and its location on your hard drive.

Hang Up

When you've completed the necessary RMM functions for a site, disconnect from the site by selecting **Hang Up** from the **Manual Operation** menu.

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Remote Maintenance Monitoring (RMM), Version 2.0

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