

*Ag*GPS[®] Autopilot Base Station

Getting Started Guide



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Revision A
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- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Changes and modifications not expressly approved by the manufacturer or registrant of this equipment can void your authority to operate this equipment under Federal Communications Commission rules.

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Introduction

In this chapter:

- Welcome
- About the Product
- Related Information
- Technical Assistance
- Your Comments

Welcome

This manual describes how to set up and use the AgGPS[®] Autopilot Base Station.

Even if you have used other Global Positioning System (GPS) products before, Trimble recommends that you spend some time reading this manual to learn about the special features of this product. If you are not familiar with GPS, visit the Trimble website (www.trimble.com) for an interactive look at Trimble and GPS.

This publication assumes that you know how to use the Microsoft[®] Windows[®] operating system.

About the Product

The AgGPS Autopilot Base Station is a mobile, all-in-one case, base receiver and base radio. The all-in-one case allows fast, efficient setup because most of the equipment can be kept in the case during operation.

Unlike the old base station, which required two tripods, the new AgGPS Autopilot Base Station has a single tripod and a remote radio antenna, which allows you to leave the radio and receiver in the case and connected at all times.

Related Information

Related information is found in the update notes. A warranty activation sheet is included with this product. Send it in to automatically receive update notes containing important information about software and hardware changes. Contact your local Trimble dealer for more information about the support agreement contracts for software and firmware, and an extended warranty program for hardware.

Technical Assistance

If you have a problem and cannot find the information you need in the product documentation, contact your local dealer. Alternatively, do one of the following:

- Request technical support using the Trimble website at www.trimble.com/support.html
- Send an e-mail to trimble_support@trimble.com

Your Comments

Your feedback about the supporting documentation helps us to improve it with each revision. E-mail your comments to ReaderFeedback@trimble.com.

Configuring the Base Station Case for Use

In this chapter:

- Introduction
- Setting up the Base Station Case

Introduction

This chapter describes how to configure the AgGPS Autopilot base station case for access to the cabling and for ease-of-use. It is important to place the cables in such a way so that the cable that needs to be removed from the case first is on top.

Setting up the Base Station Case

1. Check the contents of the base station case. See Table 2.1.

Make sure all components of the base station are in the AgGPS Autopilot base station case. The components are shipped as P/N 47733-00 and P/N 47733-90. The components from these two assemblies are placed into the case.

Table 2.1 Contents of the AgGPS Autopilot base station case

Qty	Part number	Description
1	47772-00	Rugged base station case
1	36487-02	MS750™ receiver
1	39395-90	SiteNet™ 900 radio (no antenna)
1	41249-00	Zephyr Geodetic™ GPS antenna
1	22882-10	Radio antennas: 0 dB, 3 dB, and 5 dB, and base
1	46740	NMO to N(F) adaptor for SiteNet radio
1	49102	Bracket for remote radio antenna
1	49828	Antenna mount for bracket
2	50017	Extension pole (25 cm)
1	47019-05	GPS antenna cable TNC (M) – N (M)
1	50751-10	Remote antenna cable LMR240
1	38968-01	MS750 to SiteNet 900 cable

Table 2.1 Contents of the AgGPS Autopilot base station case (continued)

Qty	Part number	Description
1	44087-10	MS750 to battery power cable
1	50761-00-ENG	<i>AgGPS Autopilot Base Station Quick Reference Card</i>

Table 2.2 shows the items that are part of the AgGPS Autopilot base station, but that are not required in the field.

Table 2.2 Additional contents of the AgGPS Autopilot base station

Qty	Part number	Description
1	40868-03-ENG	<i>MS Series Manual</i>
1	45960-01-ENG	<i>SiteNet 900 Manual</i>
1	45502-03	MS750 cable for office use
1	43249-20	MS750 CD-ROM
1	40945-10	COMMSET software disk for SiteNet 900
1	50761-50-ENG	<i>Getting Started Guide</i> (this document)

2. Attach the remote antenna mount to the remote antenna bracket and the NMO to N(F) adaptor to the SiteNet radio.
 - a. Attach the antenna mount for bracket (P/N 49828) to the narrow end of the bracket for the remote radio antenna (P/N 49102) as shown in Figure 2.1. Place the rubber gasket from the radio antennas (0 dB, 3 dB and 5 dB) and the base (P/N 22882-10) between the NMO connector side of the mount and the bracket. The NMO connector side of

the mount should be on the side of the bracket without the round cutout, that is, it should be at the opposite end of the bracket.

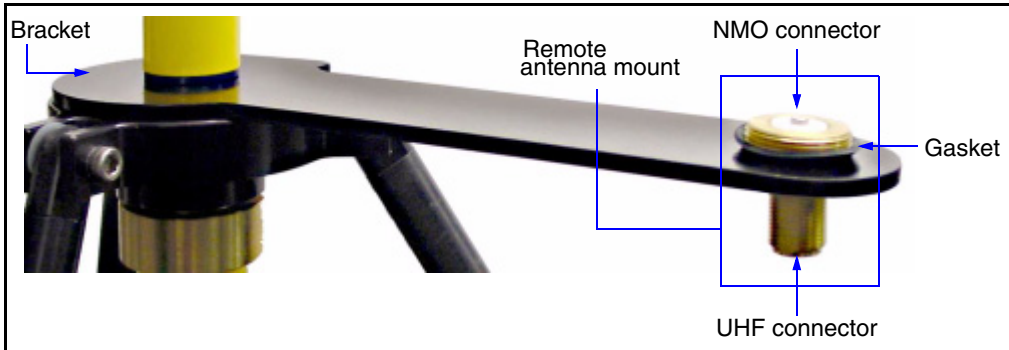


Figure 2.1 Placement of the remote antenna bracket and remote antenna mount

- b. Attach the NMO to N(F) adaptor for SiteNet radio (P/N 46740) to the SiteNet radio (P/N 39395-90) as shown in Figure 2.2.



Figure 2.2 NMO to N adaptor

3. Place the equipment in the base station case for transport or storage as shown in Figure 2.3.

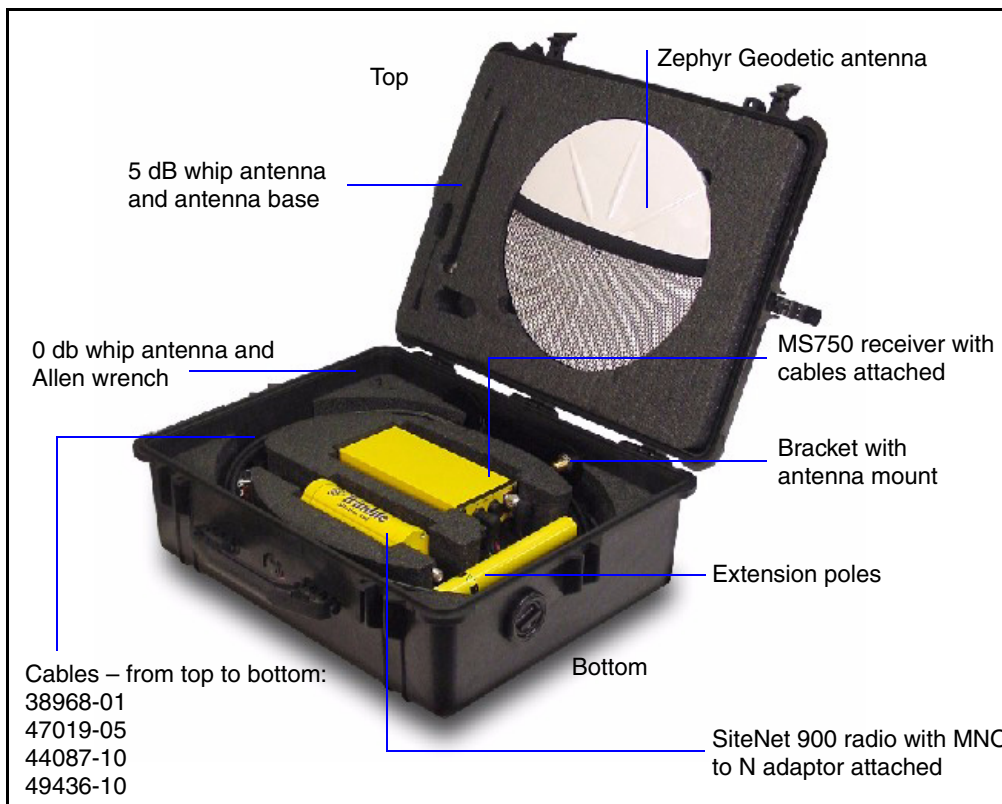


Figure 2.3 Case containing AgGPS Autopilot base station components

- c. Place the MS750 receiver (P/N 36487-02) and SiteNet 900 radio (P/N 39395-90) in the bottom of the case.
- d. Place the Zephyr Geodetic antenna (P/N 41249-00), 3-dB radio antenna (medium length whip antenna from P/N 22882-10), and radio antenna base (from P/N 22882-10) in the top of the case.

- e. Place the 0-dB radio antenna (shortest whip antenna) and Allen wrench (from P/N 22882-10) into the foam in the upper left corner of the bottom of the case.
- f. Place the bracket for the remote radio antenna with antenna mount for bracket (as assembled in step 2 of this procedure) in the upper part of the bottom of the case between the two pieces of foam.
- g. Place all cables in the oval shaped cutout on the bottom of the case in the following order:
 - MS750 to SiteNet 900 cable (P/N 38968-01)
Connect the SiteNet 900 connector (Bendix) to the radio and the 12-pin ConnexALL to the MS750 port A (A). The cable can stay connected.

Note – The 12-pin ConnexALL is keyed at 12 o'clock on this cable. Typically, Trimble ConnexALLs are keyed at 2 o'clock.

- GPS antenna cable TNC (M) – N (M) (P/N 47019-05)
Connect the N (M) connector to the MS750 antenna connector (ANT). Wrap the cable around the oval cutout. The cable can stay connected to the MS750.
 - MS750 to battery power cable (P/N 44087-10)
Wrap the cable around the oval cutout. The cable is not connected to the MS750 when it is stored.
 - Remote radio antenna cable LMR240 (P/N 50751-10)
Wrap the cable around the oval cutout. The cable is not connected to the SiteNet 900 when it is stored.
- h. Place the two 25 cm extension poles in the cut out area to the right of the MS750 and the SiteNet 900.
 - i. Place the 5-dB radio antenna (longest whip antenna) diagonally across the bottom of the case.
 - j. Place the *AgGPS Autopilot Base Station Quick Reference Guide* (P/N 50761-00-ENG) in the case.

Autopilot Base Station Display Mode

In this chapter:

- Introduction
- Configuring the MS750 Receiver





Introduction

This chapter describes how to configure the MS750 to show only the screens that are required to set up the Autopilot Base Station for operation. Typically, you only need to perform this procedure once, just before you configure the base station for the first time. However, you will also need to set the Autopilot Base Station after you have loaded new firmware onto the MS750 receiver.

Adjusting the contrast

If the MS750 receiver powers on and only a blank screen appears, the contrast setting could be set too low. Also, the LCD display can become difficult to read as lighting conditions change.

To increase or decrease contrast:

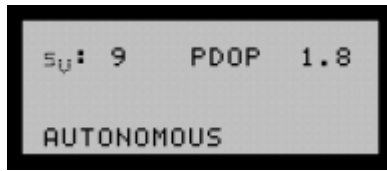
1. In the *MS750 Home* screen, press . The top right square flashes.
2. Press  to increase contrast or press  to decrease contrast.
3. Press  to accept contrast.

Configuring the MS750 Receiver



Tip – To go directly to the Home screen from anywhere in the MS750 menu system, press **▲** and **▼** simultaneously one or more times.

1. In the *MS750 Home* screen, press **▶** until the *Config Menus* screen displays:



2. Press **▼** to display the *Display Mode* screen.
3. Press **▼** again to enter the *Set Display Mode* screen. The *Set Display Mode* screen displays:



- a. Press **▶** to activate the display mode selection.
- b. Press **▼** until *CMR RTK Base* mode displays.
- c. Press **↵** to accept the *CMR RTK Base* mode. The flashing cursor disappears.
- d. Press **▼** then **↵** to exit the *Display Mode* screen.

The MS750 receiver is now set to the default parameters and will display only the *Autopilot Base Station* screen.



Tip – If you need access to all screens in the MS750 receiver, complete this procedure, but in Step 3b press **▼** *Custom* displays.

Setting up the Mobile Autopilot Base Station

In this chapter:

- Introduction
- Setting up the Base Station on a Reference Mark

Introduction

This chapter describes how to set up the base station on a reference mark using a fixed height tripod (P/N 28959-00) or a variable height tripod (wooden leg) with tribrach and adaptor (P/Ns 12178, 12179 and 12180).

Setting up the Base Station on a Reference Mark

1. Extend the tripod center post and then extend the legs to the required height.

Note – Do not fully extend the wooden tripod leg as you may need the extra length adjustment of the leg when you set up the tripod. In this step, it is important to make sure the GPS antenna is higher than any objects or people in the vicinity of the base station.

2. Position the tripod over the reference mark. Read all procedures in this step for your tripod type before you begin to plumb and level the tripod. Do one of the following:



Fixed height

- a. When you use a fixed height tripod, place the tip of the center post on the reference mark and adjust the legs to level the tripod.



Tip – Make sure the center post stays on the mark while you level the tripod by loosening the lock screw on the third leg before you attempt to level the tripod. Leave the lock screw loose until you are completely finished with leveling and plumbing the tripod.

- b. Drive the tripod legs firmly into the ground with the foot pegs.
- c. Center the bubble level on the tripod center leg by carefully adjusting the two legs with the quick release adjustable handles.
- d. Tighten the lock screw on the third leg. Check the plumb and level. The tip should be on the center of the reference mark.

Variable height

- a. When you use the variable height tripod, tighten the tribrach to the tripod head.
- b. Position the tripod roughly over the reference mark.
- c. While you look through the optical plummet sight (on the side of the tribrach), move the cross-hairs or circle as close to the mark as possible (this does not need to be exactly over the mark at this point) by lifting the entire tripod up and moving the tripod.



Tip – When you move the tripod, ensure that you keep the head of the tripod as level as possible.

- d. Drive the tripod legs firmly into the ground with the foot pegs.

- e. Loosen the tribrach just enough to allow movement of the tribrach on the head of the tripod.
 - f. Look through the optical plummet sight, and move the cross-hairs or circle exactly over the mark.
 - g. Tighten down the tribrach and check that you are still centered over the mark.
 - h. Level the tribrach by adjusting the legs up or down on the tripod.
3. Assemble the GPS antenna to the range pole. Place the radio bracket between the bottom of the range pole and the tribrach adaptor plug (removable brass plug at top of tripod, fixed height) or in the tribrach adaptor (variable height). Tighten the tribrach adaptor plug to the range pole with the radio bracket between the plug and range pole. Attach the radio antenna to the antenna mount on the radio antenna bracket.
4. Carefully place the GPS antenna with the radio antenna bracket on the tripod. Once they are in place, check the level and plumb.
5. Remove the remote radio antenna cable LMR240 (P/N 50751-10) and the MS750 to battery power cable (P/N 44087-10) from the case. The MS750 to SiteNet 900 cable (P/N 38968-01) should already be connected, as described in step 3 of Setting up the Base Station Case, page 5.



6. Remove the loose end of the GPS antenna cable TNC (M) - N (M) (P/N 47019-05) from the case. Feed the TNC type connector end of the cable through the access port on the base station case and connect it to the Zephyr geodetic antenna TNC-type connector.
7. Connect one end of the remote radio antenna cable LMR240 (P/N 50751-10) to the radio antenna mount on the bracket. Feed the other end of the cable through the access port and connect it to the SiteNet radio adaptor (P/N 46740).
8. Feed the TA-3 (F) end of the MS750 to the battery power cable (P/N 44087-10) through the access port and connect it to the TA-3 (M) connector on the MS750 to SiteNet 900 cable (P/N 38968-01).
9. Connect the alligator clips to the power source. Red to positive (+), black to negative (-).
10. Check to see if the MS750 (front display) and SiteNet (LED on bottom of radio) both have power.
11. Configure and start the AgGPS Autopilot base station. For more information, see Configuring the Base Station, page 21.

Configuring and Starting an Autopilot Base Station

In this chapter:

- Introduction
- Configuring the Base Station

Introduction

This chapter describes the required parameter settings for configuring a base in the MS750 receiver and setting the Autobase function.

Note – If you have already configured your receiver and turned on Autobase for the station you are currently occupying, simply apply power to the receiver. The Autobase function should configure the base station and begin transmitting RTK data to your rover. If the Autobase does not work properly, see the troubleshooting table in the AgGPS Autopilot Base Station Quick Reference Guide.



If you need to adjust the contrast of the LCD display, see Adjusting the contrast, page 12.

Configuring the Base Station

To configure the AgGPS Autopilot base station, you need to complete the following procedures:

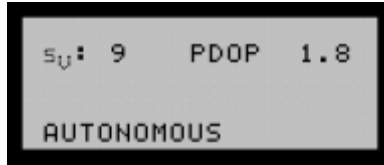
- Entering the base station antenna type and height, page 23
- Setting the location of the base station, page 25
- Entering the name and activating the ID of the base station, page 29
- Turning on the Use For Autobase function, page 31
- Saving an Application File, page 35.



Tip – To go directly to the Home screen from anywhere in the MS750 menu system, press  and  simultaneously one or more times.

Entering the base station antenna type and height

1. In the receiver *Home* screen, press **>** until the *Config Menus* screen appears.



Note – If your receiver has existing base station positions (through using Autobase), go to Turning on the Use For Autobase function, page 31.

2. Press **✓** until the *Display Mode* screen appears
3. Press **>** until the *Config Base Stn* screen appears. You can now start configuring the base station.
4. Press **✓** to display the *Antenna Type* screen.
5. Press **>** to activate the antenna type selection. Press **✓** until your antenna type appears.

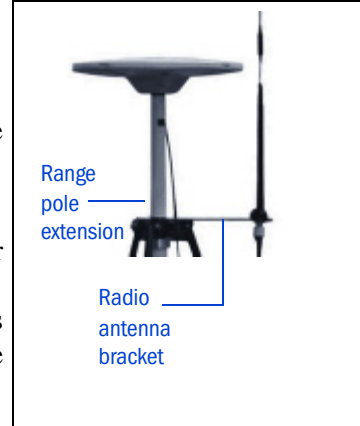
*Note – For a new AgGPS Autopilot base station, the correct antenna type is **Zephyr Geodetic** (P/N 41249-00). For an old AgGPS Autopilot base station, the correct antenna type is **uCentered 13" GP** (P/N 36569-00).*

6. To accept the antenna type, press **←** then **✓**. The *Base Ant Ht* screen appears.

7. To activate the *Base Antenna Ht* field, press **>**.

a. Place the antenna on the reference mark and measure the height of the antenna.

b. Enter the antenna height in the required units (meters or feet) as previously configured. To do this, press **>** to move the cursor to the right. If you press **>** when the cursor is on the last character, the cursor moves back to the first character. Press **^** or **v** to change the value of each number.



Fixed height

To determine the exact height of the GPS antenna (new base station), enter the extended height of the center pole, plus the added height of the radio antenna bracket (0.027 m or 0.088 ft.) and the range pole extension (0.250 m or 0.823 ft.).

Variable height

To determine the exact height of the GPS antenna (new base station), enter the height of the tripod, plus the added height of the radio antenna bracket (0.027 m or 0.088 ft.) and the range pole extension (0.250 m or 0.823 ft.).

Note – When you use the old base station system without the radio antenna bracket and range pole extension, enter the extended height of the center pole (fixed height) or height of tripod (variable height).

c. To accept the base antenna height, press **↵**.


Setting the location of the base station

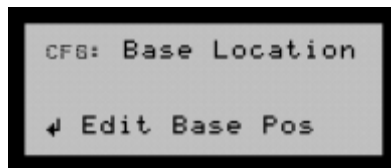
Do one of the following:



- If you know the coordinates of the reference mark, use the Edit Base Position method, page 25.
- If you do not know the coordinates of the reference mark, use the Set From Avg method, page 26.



Edit Base Position method

Use this method to enter or edit the current coordinates (latitude, longitude, and height) of the MS750 receiver to the known coordinates of the reference mark. The reference mark has been surveyed, previously set by averaging, or the coordinates have been determined by another method. Trimble strongly recommends that you have all base coordinates surveyed when you use multiple base location across a large area or farm. There are several ways to survey or make the positions relative to each other. For more details, contact your local Trimble dealer. With the base coordinates relative to each other, you can move from one field to another and use any base location within the area, whether or not that base was used to set the A-B line of the field.

1. In the *Config Base Stn* screen, press  until the *Base Location – Edit Base Pos* screen appears.






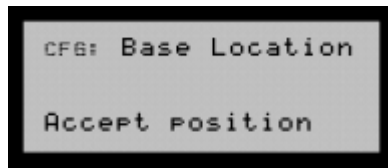
2. Press . The *Base Latitude* screen appears.
3. Enter the latitude in degrees, minutes, and seconds. Then enter the hemisphere, N or S. (The default hemisphere value is N - North.) To accept the base latitude, press . The *Base Longitude* screen appears.



4. Enter the longitude in degrees, minutes, and seconds. Then enter the hemisphere, W or E. (The default hemisphere value is E - East.) To accept the base longitude, press . The *Base WGS Height* screen appears.
5. Enter the sign (+/-) and the height in configured units. To accept the base height, press .



Caution – You should enter the *ellipsoid height* of the reference mark, not the *elevation*.

6. When the *Base Location Accept position* screen appears, do one of the following:
 - a. To *accept* the base position, press , the *Base Location – Edit Base Pos* screen appears.
 - b. To *reject* the base position, press . The *Reject position* screen appears. Then press  and the *Base Location – Edit Base Pos* screen appears.




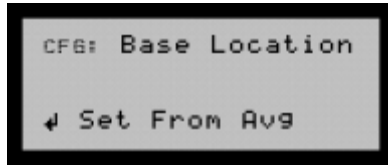
7. If you need to edit the position again, press . If you accepted the position, press  twice. The *Base Name* screen appears.


Set From Avg method

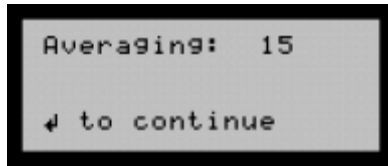
Use this method if you do not know the coordinates for the reference mark. With *Set From Avg*, you can average positions from the MS750 receiver over a period of time to establish reference mark coordinates. Whether or not they are averaged, the resulting autonomous GPS coordinates (latitude, longitude, and height) can contain large errors in relation to the true reference mark or to another base location in your

area. If you use this method, make sure that you enter the base antenna height first (see Entering the base station antenna type and height, page 23, Step 7).


1. In the *Config Base Stn* screen, press  until the *Base Location – Set From Avg* screen appears:



2. Press . The *Base Location Averaging* screen appears:





The screen displays each measurement (1-second epoch) as it is counted. The longer that you average the autonomous position, the more accurate the base location will be. Trimble recommends that you average the position for at least 60 measurements (60 seconds).

3. Once the required number of measurements are made, press  to stop the averaging and display the position. The *Base Latitude* screen appears.
4. Write down the latitude (degrees, minutes, and seconds), and the hemisphere designation (N or S).




Tip – Record the latitude, longitude, and height of all your base locations for future use.

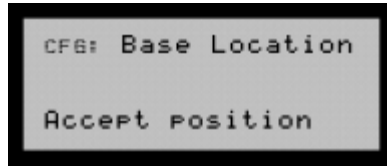
5. To accept the base latitude, press . The *Base Longitude* screen appears.





6. Write down the longitude (degrees, minutes, and seconds), and the hemisphere designator (W or E). To accept the base longitude, press .
7. The *Base WGS Height* screen appears. Write down the height value in the configured units. Ensure that you include the sign of the value (+/-).





Caution – The value in this field is the *ellipsoid height* of the reference mark, not the *elevation*.

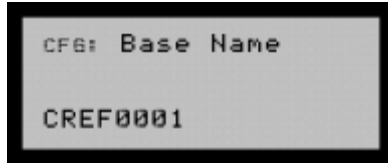
8. To accept the base height, press . The *Base Location Accept position* screen appears.






9. Do one of the following:
 - a. To **accept** the base position, press , the *Base Name* screen appears.
 - b. To **reject** the base position, press . The *Reject position* screen appears. Then press  and the *Base Location – Edit Base Pos* screen appears.
10. Press . The *Base Name* screen appears.



Entering the name and activating the ID of the base station

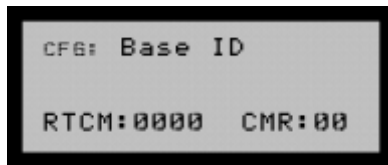
1. In the *Base Location - Edit Base Pos* or *Base Location - Set from Avg* screen, press  until the *Base Name* screen appears. To activate the name entry, press .







2. To enter each character of the name of the base location (reference mark), press  or . To move to the next character, press .

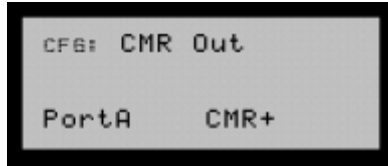
*Note – Each base location must have a unique name that can be up to eight characters long. It is important to record the name of the base location, along with the coordinates that you recorded (see *Edit Base Position method*, page 25 and *Set From Avg method*, page 26).*

3. To accept the base name, press  and then . The *Base ID* screen appears:



4. To activate the *Base ID* field, press .
5. To move the cursor to the *CMR ID* field, press . To enter each number in the field, press  or . The *CMR ID* is for the radio, not the base location. It must be between 00 and 31, and must be unique for each radio that is transmitting in your area or on your farm.

6. To accept the base ID, press **↵**, then **▼** The *CMR Out* screen appears:



7. Press **>** to activate the *CMR Out* field. Press **▲** or **▼** to change the *CMR Out* field to Port A.
8. Press **>** to move to the *CMR type* field. Press **▲** or **▼** to change the *CMR type* field to CMR+.
9. Press **↵** to accept the *CMR Out* screen and then press **▼** to move to the *RTCM Out* screen.

Note – If you have already configured the display mode to CMR RTK Base, as described in Autopilot Base Station Display Mode, page 11, or if the RTCM screen does not appear, go to Turning on the Use For Autobase function, page 31, Step 1.

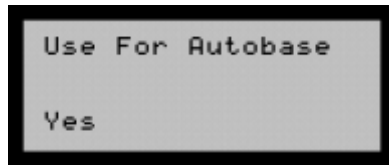
10. Press **▲** or **▼** to change the *RTCM out* field to Off.
11. Press **↵** to accept the *RTCM out* field and then press **▼** to move to the *Use For Autobase* screen.

Turning on the Use For Autobase function

Trimble recommends that you use the Autobase function of the MS750 receiver.

Using the Autobase function allows you to return to a reference mark, set up the base station, and apply power to the MS750. The receiver then automatically finds the base location for the reference mark. When you select Yes in the *Use For Autobase* field, you must save the base station configuration in an application file. For more information, see *Saving an Application File*, page 35. You can store up to 10 base locations in the receiver memory.

1. Press **>** to activate the *Use For Autobase* field. Press **^** or **v** to change the field to Yes.
2. Press **←** to accept the *Use For Autobase* screen and then press **v**.



3. The *Exit Config* screen appears. Press **←** to exit the base station configuration.

Working with Application Files

In this chapter:



- Introduction
- Activating an Application File
- Saving an Application File
- Deleting an Application File







Introduction

When a base location is saved, an application file is created in the MS750 receiver. Up to 10 application files can be stored in the receiver. If you experience difficulty with the Autobase function, you may need to manipulate the base locations (*appfile*) manually. Do this in the *CFG:Appfile* screen (select *Config Menus / Config GPS*). In this screen you can activate an application file, and save or delete it.

Activating an Application File



Tip – To go directly to the Home screen from anywhere in the MS750 menu system, press  and  simultaneously one or more times.

1. In the MS750 *Home* screen, press  until the *Config Menus* screen appears.
2. Press  to display the Display Mode screen.
3. Press  until *Config GPS* appears.
4. Press  to enter the *Config GPS* screens and start (activate) an appfile.
 - a. Press  to activate the *CFG: Appfile* screen. The cursor should begin flashing on Start.
 - b. Press  to move the flashing cursor to the second line, and to the appfile name field. This field may be set to Current Active or [APPFILENAME] ACTIVE.

- Press to scroll through the appfiles currently stored on the MS750. Press 4 to accept the APPFILENAME you want to use. The screen displays a message Wait... and will then display [APPFILENAME] ACTIVE.



You can now go to *Config Base Stn* to view the base station configuration or make any changes to the configuration.

Saving an Application File

Before you can use a base location and the Autobase function, the base location must be saved as an application file (appfile) in the MS750 receiver. To do this:

- In the *Config Base Stn* screen, press until the *Config GPS* screen appears. Press to configure GPS fields.
- The *CFG: Appfile Start* screen appears. Press to activate the *Appfile* screen.
- Press until *Save* appears as the appfile option.
- Press to move the cursor to the appfile name on the second line. Enter the name for the appfile using or to change the character and to move to the next character.



Tip – To make it easy to identify the appfiles, Trimble recommends that you use the base name as the appfile name.

5. Press **↵** to save the appfile. The message *Saved* appears briefly next to the appfile name, then the message *Active* appears next to the appfile name to identify it as the active appfile.



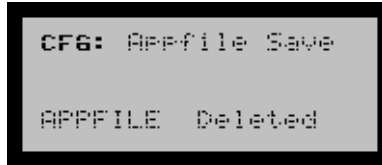
Tip – To go directly to the Home screen from anywhere in the MS750 menu system, press **^** and **v** simultaneously one or more times.



Deleting an Application File

You will need to delete appfiles when you have reach the 10 files limit or when you find duplicate appfiles on the receiver. Once an appfile is deleted, you cannot recover it. Make sure you are deleting the correct application file, and if you may need to use it at a later date, that you have backed it up on your computer.

1. In the *MS750 Home* screen, press **>** until the *Config Menus* screen appears.
2. Press **v** to display the *Display Mode* screen.
3. Press **>** until *Config GPS* appears.
4. Press **v** to enter the *Config GPS* screens and save an appfile.
 - a. The *CFG: Appfile Start* screen appears. Press **>** to activate the *Appfile* screen.
 - b. Press **v** until *Del* is shown as the appfile option.
 - c. Press **>** to move the cursor to the appfile name (on the second line). Press **^** or **v** to scroll through the appfile names and find the appfile you want to delete.
 - d. Press **↵** to delete the appfile.

5. The message Deleted is displayed next to the application file name for a brief period, and then is replaced by the active application file in the MS750.



Tip – To go directly to the Home screen from anywhere in the MS750 menu system, press  and  simultaneously one or more times.

Configuring the SiteNet 900 Radio

In this chapter:

- Introduction
- Configuring the SiteNet 900 Radio

Introduction

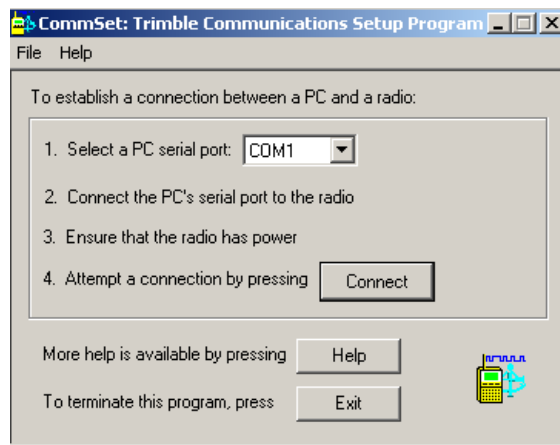
Before you use the SiteNet 900 radio for the first time, you must configure it as a *base* radio and set it to the correct network setting. To configure the radio, use the COMMSET software.

Before you can configure the radio, make sure that:

- The SiteNet 900 radio is connected to the MS750 receiver using the MS750 to SiteNet 900 cable (P/N 38968-01)
- The MS750 receiver is connected to power using the MS750 to battery power cable (P/N 44087-10)

Configuring the SiteNet 900 Radio

1. Connect the SiteNet 900 radio to the serial (COM) port of your computer using the DE-9 connector on the MS750 to SiteNet 900 cable (P/N 38968-01).
2. On your computer, start the *COMMSET* software. The following dialog appears:

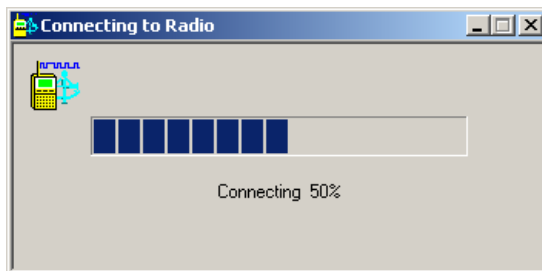


3. In the first field, enter or select the serial port that you are using on your computer from the drop-down list.

4. Click **Connect**.

The software will attempt to connect with the SiteNet 900 radio.

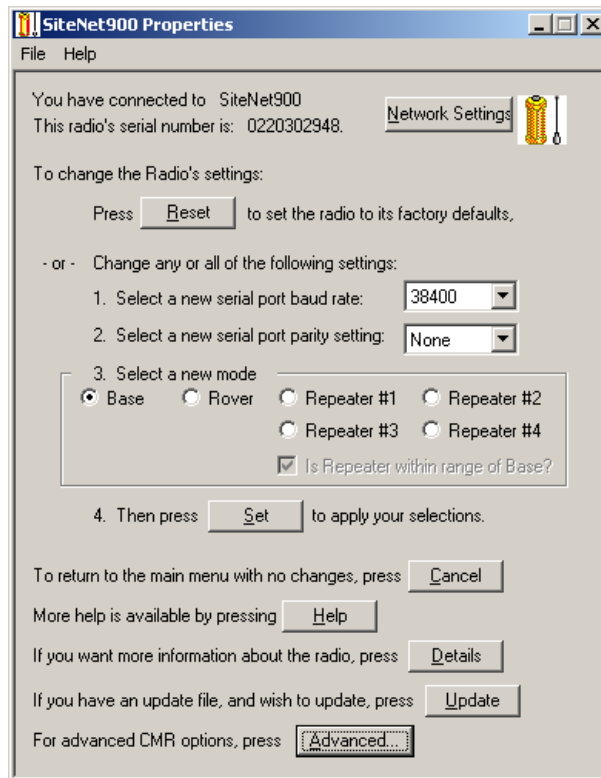
If the software connects, the following dialog appears:



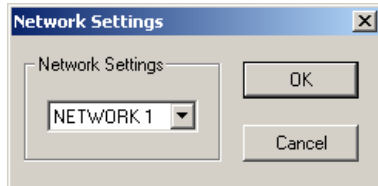
5. If the software fails to connect:

- a. Check all connections.
- b. Check to see if both the radio and the receiver have power. Check the LED on the bottom of the SiteNet radio and the receiver.
- c. Check that you have selected the correct serial port (COM port).

Once the software connects, the following dialog appears:



- The network settings *must match* the settings for the rover SiteNet 900 radio. To set up the correct network, click **Network Settings**. The following dialog appears:

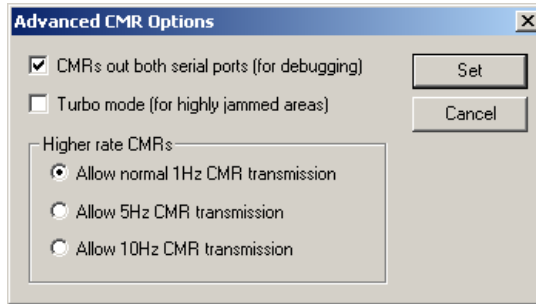


Note – If you know of another Autopilot system in your area using a SiteNet 900 radio, make every effort to determine what network setting they are using. Then set your network settings to another network.

- Select a network setting that matches your rover radio. To do this, click on the *Network Settings* list and select a network. Click **OK**. You are returned to the *SiteNet900 Properties* dialog.
- In the *SiteNet900 Properties* dialog, change the following settings:
 - In the first item, enter or select a new serial port baud rate of 38400.
 - In the second item, enter or select None.
 - In the third item, select the *Base* option.

Note – To function properly, the radio must be set to base.

9. There are some optional settings that you can use with the base radio. Click **Advanced** in the *SiteNet900 Properties* dialog. The following dialog appears:



10. In the Advanced CMR dialog, set the following:
- Select the *CMR out both serial ports (for debugging)* check box.
Note – Service personnel use this option to debug any radio problems. Turning it on does not affect the radio performance.
 - If you are in an area with heavy radio (RF) traffic, select the *Turbo mode (for highly jammed areas)* check box.
Note – This mode increases the power consumption of the base radio. Only use this option where necessary.
 - In the *Higher rate CMRs* group, select the *Allow normal 1Hz CMR transmission* option so that CMR works with the Autopilot system.
 - Click **Set** to return to the *SiteNet900 Properties* dialog.
11. In the *SiteNet900 Properties* dialogue, click **Set** (item 4) to set the SiteNet 900 radio to the selected properties.
The software returns to the *Commset* dialog.
12. Click **Exit** to complete the configuration.

13. Disconnect the MS750 to SiteNet 900 cable (P/N 38968-01) DE-9 from the serial port of your computer. The base SiteNet 900 radio is now ready to use.

***Note** – Make sure that the rover SiteNet 900 radio is configured as a rover with the same network setting.*

A

Express Autobase

In this appendix:

- Introduction
- Configuring a New Base Station
- Using the Express Autobase Function

Introduction

This appendix describes how to use Express Autobase and how to configure a new base station when Autobase is not available or fails.

For help with navigating the menu system, see Figure A.1, page 51, Figure A.2, page 59, and Figure A.5, page 64.

At start up, the MS750 receiver begins to search its system for a base file that contains a base station location (position) that matches the current GPS antenna location. If the receiver finds such a file, it loads the file and begins transmitting corrections to the rover. This is called Autobase.

If the receiver does not find the required file, you must configure the receiver manually.

Figure A.1 on the following page shows the Config menu structure, Express Autobase Display mode.

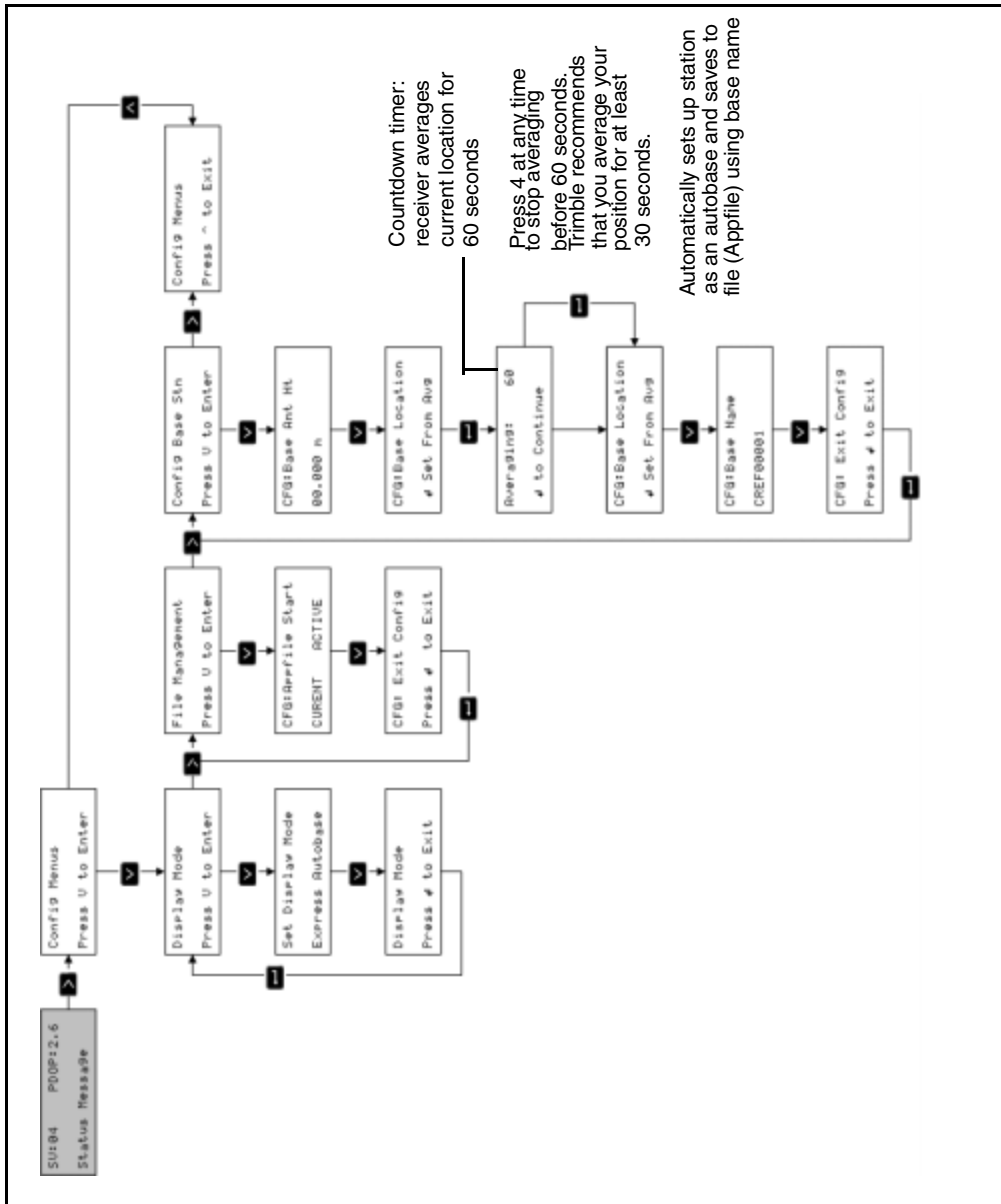


Figure A.1 Config menu structure - Express Autobase Display mode



Configuring a New Base Station

This section describes how to configure the base station and start transmitting corrections from the base to the rover (tractor).

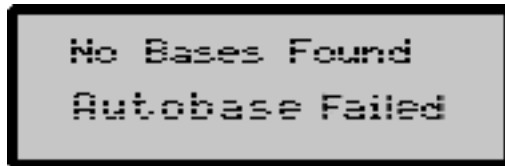


Caution – The Express Autobase Display mode sets the default antenna type to Zephyr Geodetic (TP/N 41249-00). Do not use Express Autobase with a uCentered 13" GP (TP/N 36569-00) antenna.

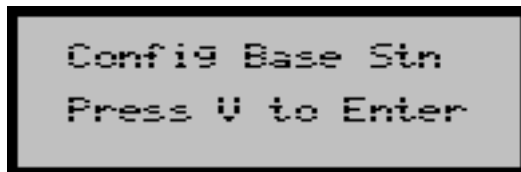


Tip – To go directly to the Home screen from anywhere in the MS750 menu system, press  and  simultaneously one or more times.

If the current location does *not* have a base file associated with it, the following screen appears when you start the receiver:



To go directly to the *Config Base Stn* menu, press any key on the receiver front panel. The following screen appears:





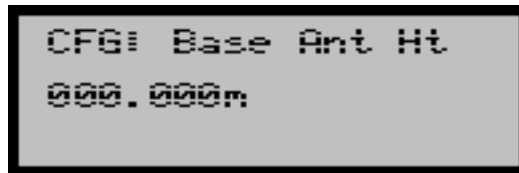
To configure a new base station for your current location, you need to complete the following procedures:






- Entering the GPS antenna height, page 53 (this is the height above the ground)
- Establishing a location, page 54 for the base station (latitude, longitude, and height)

- Setting the base name, page 55
- Saving the base station settings, page 55 to the receiver memory.

Entering the GPS antenna height

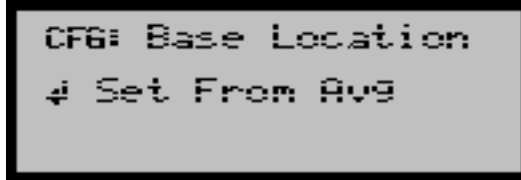
1. Measure the height of the base antenna (in meters) above the reference mark. Use one of the following methods:
 - **Fixed Height:**
The extended height of the center pole, plus the height of the radio bracket (0.027 m) and the extension pole (0.250 m) that has been added to extend the height of the GPS antenna.
 - **Variable Height:**
The height of the tripod, plus the height of the radio bracket (0.027 m or 0.088 ft.) and the extension pole (0.250 m or 0.823 ft.) that has been added to extend the height of the GPS antenna (New Base Station).
2. Press  to navigate to the *Base Ant Ht* screen. Press  to activate the antenna height field:




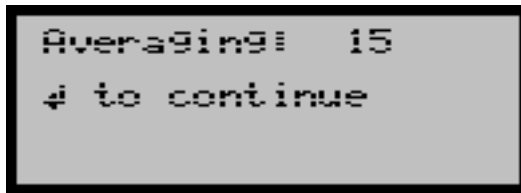
3. Enter the antenna height:
 - a. To move the cursor, press . If you move the cursor when it is on the last character, it loops back to the first character.
 - b. To change the value of each number, press  or .
 - c. To accept the base antenna height, press .
4. Press  to move to the next screen.


Establishing a location


The MS750 receiver uses the Set from Average method to establish a position (reference mark coordinates). This method averages positions over a period of time to provide GPS coordinates (WGS-84 latitude, longitude, and height).



1. From the *Set From Avg* screen, press . The base location *Averaging* screen appears. A timer on the screen counts down from 60 seconds:

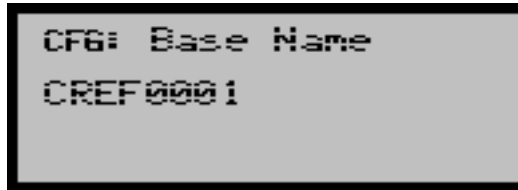


To stop averaging and save the position, you can press  at any time during the 60 seconds countdown time. However, the longer you average the position, the more accurate the base location will be. Trimble recommends that you allow the receiver to average for at least 30 seconds.

2. Once the *Base Location – Set From Avg* screen appears again, press  to move to the *Base Name* screen.

Setting the base name

1. In the *Base Name* screen, press **>** to activate the name entry field:



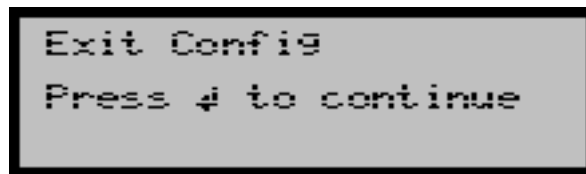
2. Press **^** or **v** to enter each character of the base name. Press **>** to move to the next character.

The base name can be up to 8 characters long. Each base location in your area or on your farm must have a unique name. It is important to record the name of the base location, and the coordinates recorded in Establishing a location, page 54, Step 2.

3. To accept the base name, press **←**. Then press **v** to move to the *Exit Config* screen.

Saving the base station settings

In the *Exit Config* screen, press **←** to exit base station configuration:





A base station file is automatically saved on the MS750 receiver. This file contains the antenna height, base station name and location, and preset base station parameters.

The *Home* screen displays the message AUTOBASE. The receiver is now configured for the current location and is sending corrections to the rover system.

Each time you return to this station, the receiver automatically finds the correct base file by matching the receiver's current location to the location in the saved base file.

Note – If the Home screen does not display AUTOBASE, refer to the Troubleshooting table, page 65.



Tip – If the screen shown is not the Home screen, you can press  and  simultaneously (usually twice) to go directly to the Home screen from anywhere in the MS750 menu system.

Using the Express Autobase Function

Use the Autobase function as a tool to automatically configure and start the Autopilot base station. Each time the GPS antenna is set up on a reference mark, and power is applied to the receiver, the MS750 will use its current location to search each base file for a base location that is closest to the current location, see Saving the base station settings, page 55. If the receiver finds an base file with a location within 50 meters (164 feet), the base station is automatically configured and starts broadcasting corrections to the rover (tractor).

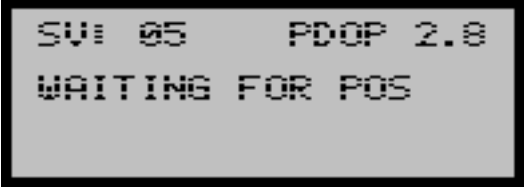
1. Carefully set up the base station over the reference mark using the steps outlined in Setting up the Base Station on a Reference Mark, page 16



Caution – If the antenna height has changed since the last occupation, you must update the *Antenna Height* field to ensure that correct positions are generated.

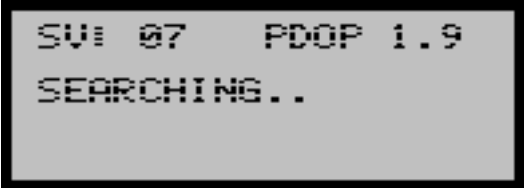
2. Apply power to the MS750. The receiver begins to track satellites and calculate its current position.

In the *Home* screen, the message Waiting For Pos appears on the second line:



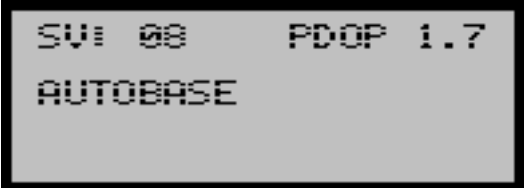
```
SU: 05    PDOP 2.8
WAITING FOR POS
```

Once the receiver has a position, the message Searching appears on the second line:



```
SU: 07    PDOP 1.9
SEARCHING..
```

When the receiver finds a base location that matches the receiver location, AUTOBASE appears on the second line of the *Home* screen. This means that Autobase has started successfully and that the receiver is using the base file (appfile) to configure and start the base station. You can now begin operations:



```
SU: 08    PDOP 1.7
AUTOBASE
```

If you receive a message other than AUTOBASE, see Table A.1 below and the menu diagrams on the following pages for more information.

Table A.1 Troubleshooting

Message	Description	Action
AUTOBASE	Autobase start up is successful and the receiver is using the base file (appfile) to configure and start the base station.	Begin operations
No Base Found Autobase Failed	No Autobase base File (appfile) was found with a base location within 50 meters (164 feet) of the receiver's current location. The Autobase function has failed.	<p>If you are occupying this station for the first time, you must establish a base file for this station (reference mark). For more information, see <i>Configuring a New Base Station</i>, page 52.</p> <p>Make sure that you are occupying the correct reference mark. The reference marks must be well marked and protected from any possible damage.</p> <p>If you are on the correct reference mark, make sure that the base location you are occupying is saved as a base file in the receiver. For information on how to view the saved base files, see Figure A.4, page 63.</p>
>1 Base Found Autobase Failed	More than one base file (appfile) was found with a base location within 50 meters (164 feet) of the receivers current location. The Autobase function has failed.	Make sure you have not saved more than one base file with different names for the reference mark you are occupying. For information on how to delete any unnecessary files, see Figure A.3, page 61.

Figure A.2 shows the successful Autobase startup sequence. You are setting up on an existing base station and the location is saved as a file in the MS750.

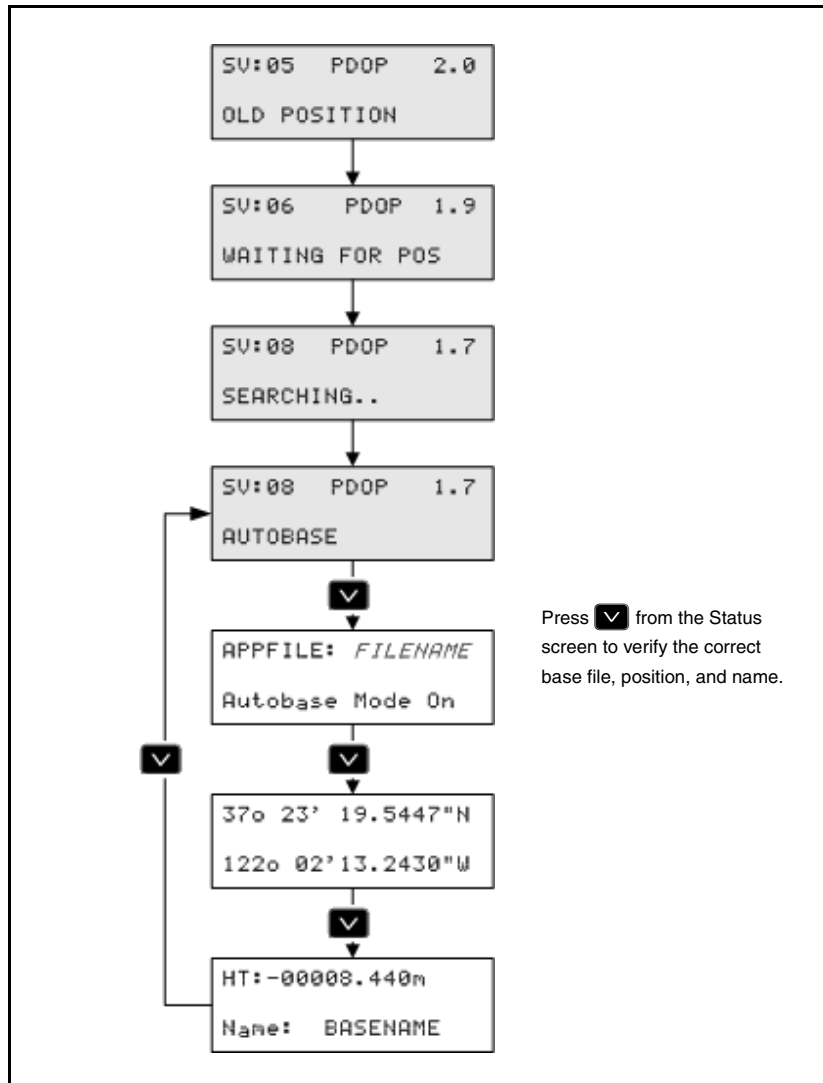


Figure A.2 Successful startup sequence

This menu diagram shows the Autobase functionality when the current antenna position is not saved within the base file.

This may occur in the following situations:

- You are setting up on a new base station (the current location is not saved as a base file).
- The GPS antenna position is not within 50 metres (164 feet) of a base station saved in a file (wrong reference mark).
- There are no base station files that match. Review the base files. See Figure A.4, page 63.

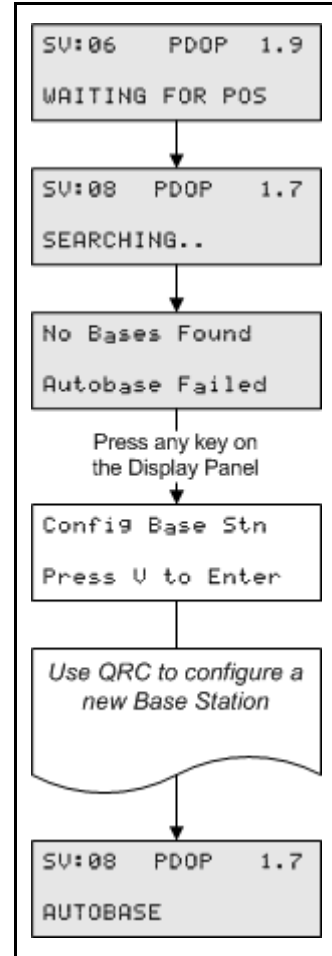


Figure A.3 shows the Autobase functionality when more than one file has the same base position.

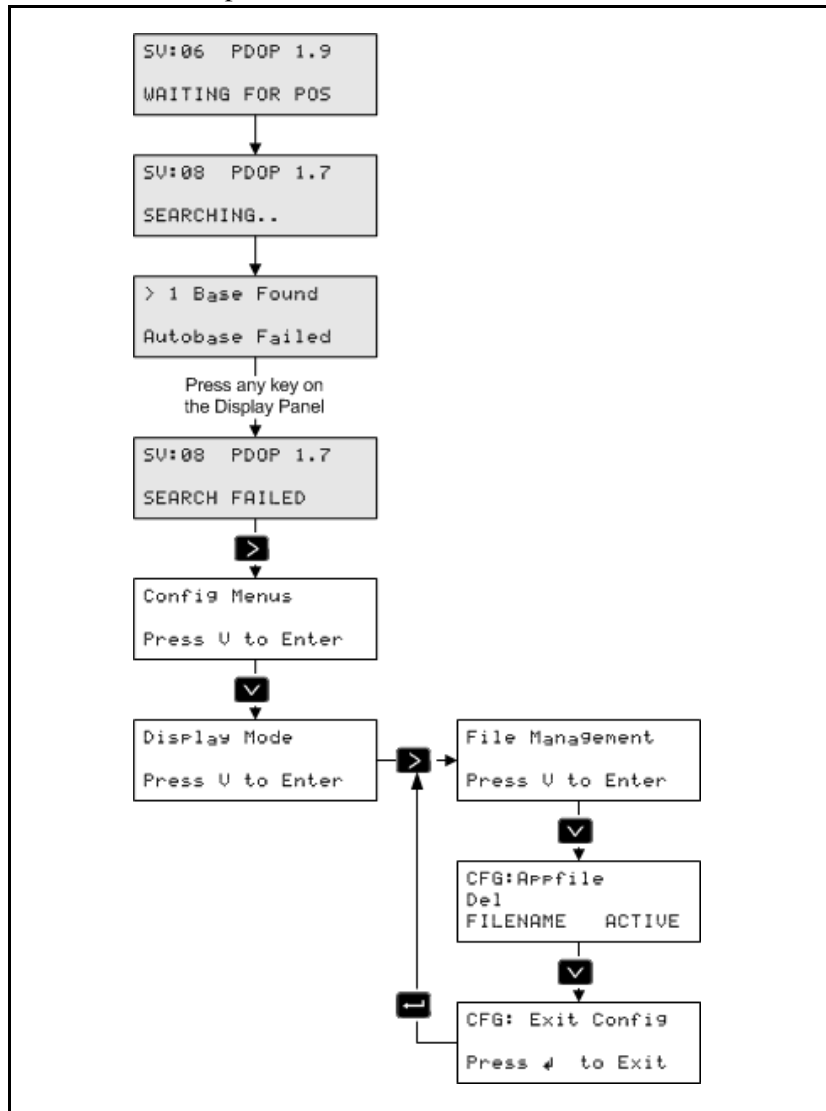


Figure A.3 Autobase functionality with more than one file with the same base position

In this situation, you are setting up at a location that has two or more base station files associated with the location (latitude and longitude) of the base station.

Determine which base files are duplicates and delete the unnecessary files. See Table A.4.

To delete a file:






1. Navigate to the *Field Management* menu.
2. Press  twice and then press  to change the file management action to Del.
3. Press  and then press  to scroll through the base file names to find the one you want to delete.
4. Press .

Figure A.4 shows how to review base files, to determine if a file is missing or duplicated.

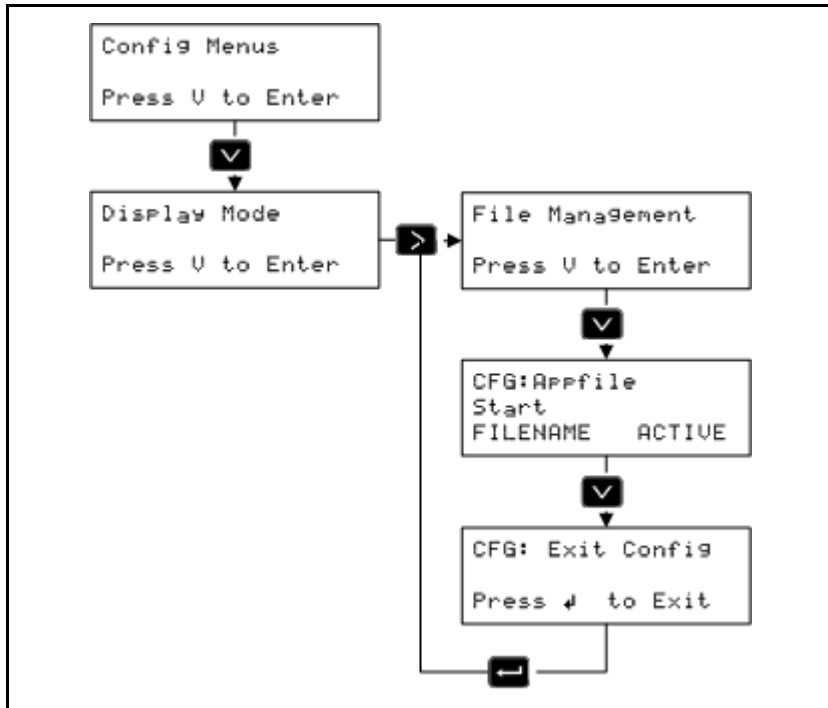


Figure A.4 Reviewing base files

To review base files:

1. Navigate to the *File Management* menu.
2. Press **>** twice and then press **▼** to scroll through the base file names to review them.
3. Press **←** when finished reviewing files, and then press **←** again to exit the menu.

Figure A.5 shows the Express Autobase screens and functionality.

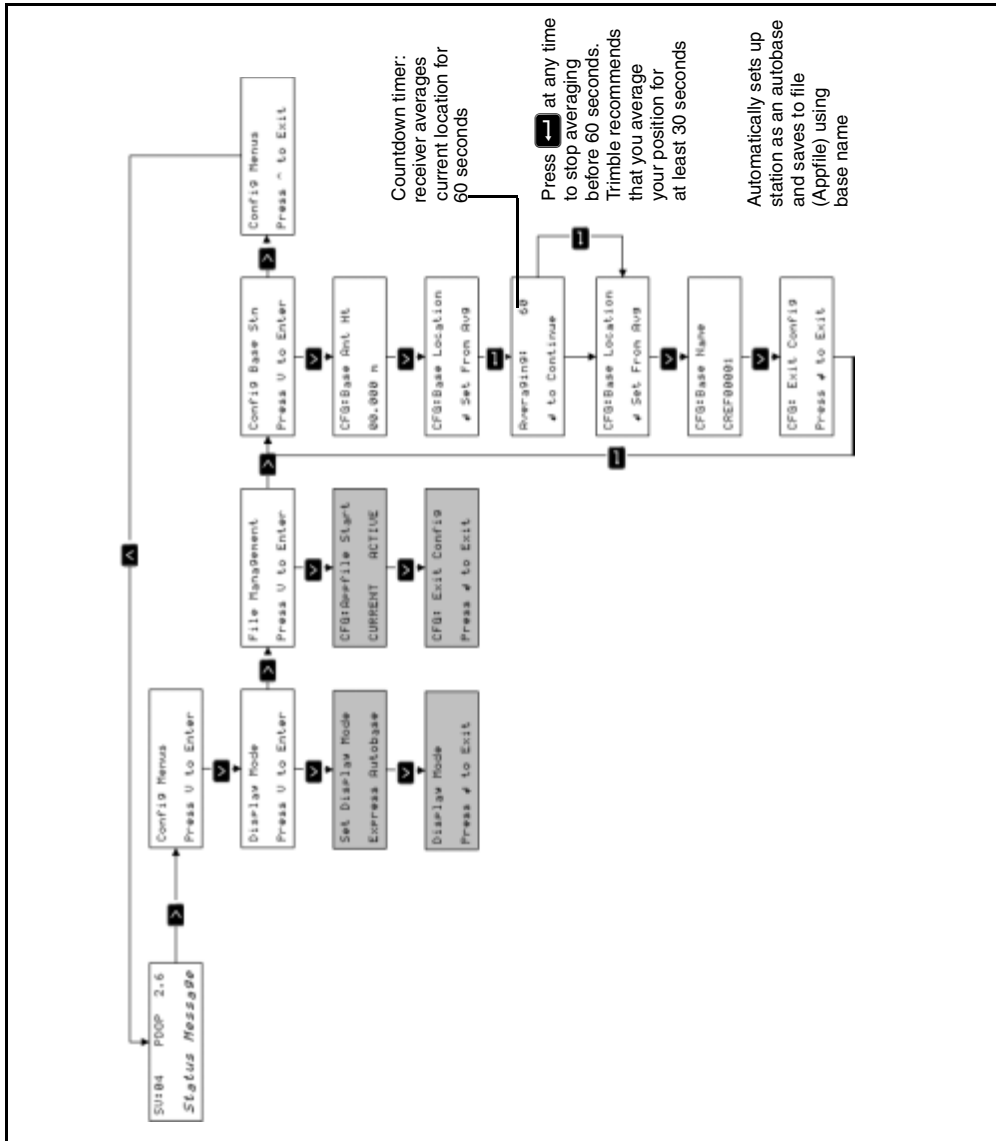


Figure A.5 Express Autobase screens and functionality

Table A.2 shows the status messages that can appear in the Express Autobase screens.

Table A.2

Status Message	Description
WAITING FOR POS	Receiver is waiting for the first position from the satellites
SEARCHING..	Receiver is searching for a base file that contains the current position of the GPS antenna
AUTOBASE	Receiver has found a base file with a position that matches the position of the current GPS antenna. Receiver is working as an Autobase base station.
SEARCH FAILED	Autobase function has failed for one of the following reasons: No Bases Found – Autobase Failed >1 Base Found – Autobase Failed
OLD POSITION	The receiver has insufficient satellites for a valid position. Typically seen at receiver startup. This message is removed when four or more satellites are available. If this message appears for a long time and the screen displays SV: 00, check the connections to the GPS antenna.

Display Mode Menu

Use the *Display Mode* menu to configure the number and types of menus that are available for displaying information and for configuring the receiver.

The default display mode setting is Express Autobase. For more information, refer to your *MS Series* manual.

File Management Menu

Use the *File Management* menu to manage base station files (Appfiles). Use this menu to start, save, or delete a file.

The default display mode setting, *Express Autobase*, automatically saves and starts your file when you create a base station, so there is no need to save or start a file in this menu when working in the *Express Autobase* display mode. You may need to use the delete function to remove unnecessary files, and so on.

Notes

Notes