

**ADD-ON GPS
3000/3050/3100**

**INSTALLATION
AND
GENERAL INSTRUCTIONS**

Important Notices

Before beginning installation of your Add-On GPS 3000/3050/3100, please take the time to thoroughly read these instructions. Signal words (**CAUTION**, **IMPORTANT**, and *NOTE*) are provided to draw attention to information that is important for the safe/correct installation and operation of this product.

- **CAUTION**--will alert you to situations that will impact the physical safety of you or others.
- **IMPORTANT**—will alert you to the potential for damage to the product or loss of data.
- *NOTE*--will provide you with additional information to simplify a procedure or clarify a process.

After completing installation of the Add-On GPS we recommend that you place these instructions in the Options Section of your PF3000 Operator's Manual to prevent their loss.

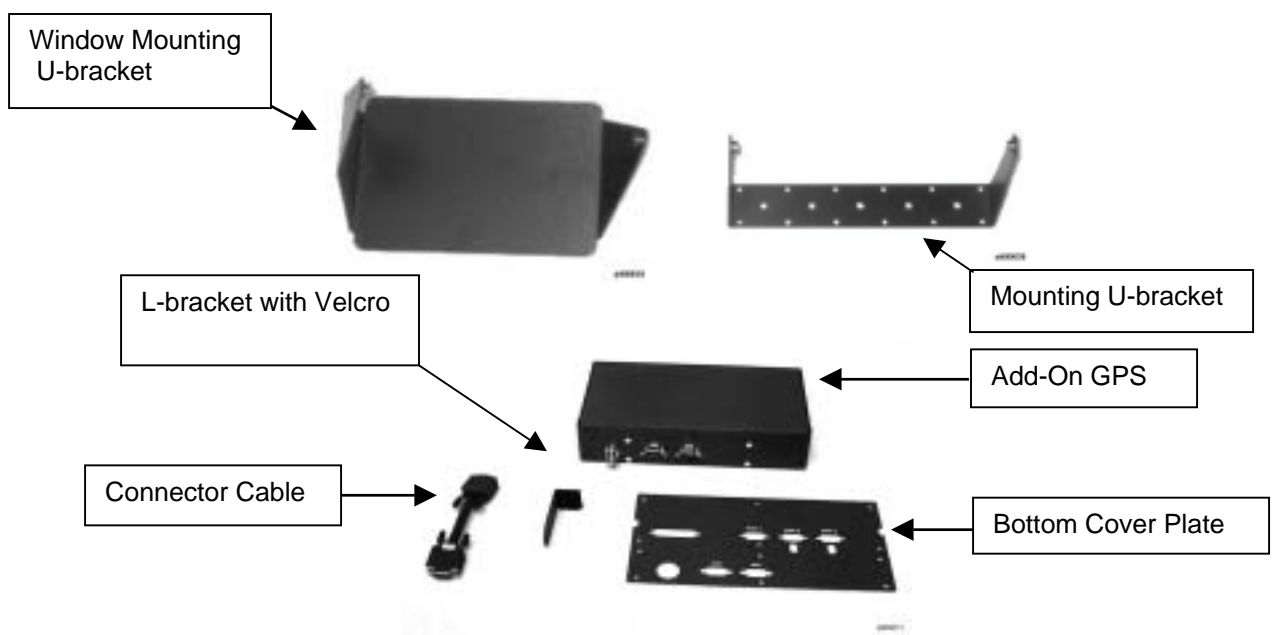
To receive upgrade/update information of this product you must send in or fax the Registration Form. Refer to the Registration Form for address and fax number.

Item	Page
Installing Add-On GPS	2
Updating Operating Program	4
Install Window –Mount PF3000 Bracket	5
Antenna Installation	6
Parts, Tools for Antenna Installation	7
Installing the Antenna Bracket	7
Installing the Antenna	8
Routing the Cable to the Cab	9
General Instructions	10
Overview	10
General Information	10
Beacon Selection	10
Satellite Selection	13
Optional WAAS Selection	20
Diagnostic Screen	21
NMEA Messages	24
GPS Output/Input	24
Troubleshooting	25
Parts List	27
Beacon Information	28
WAAS Information	32
Satellite Information	33

Installing Add-On GPS

The following parts and tools are needed to install the Add-On GPS 3000/3050/3100 in the combine cab or another vehicle:

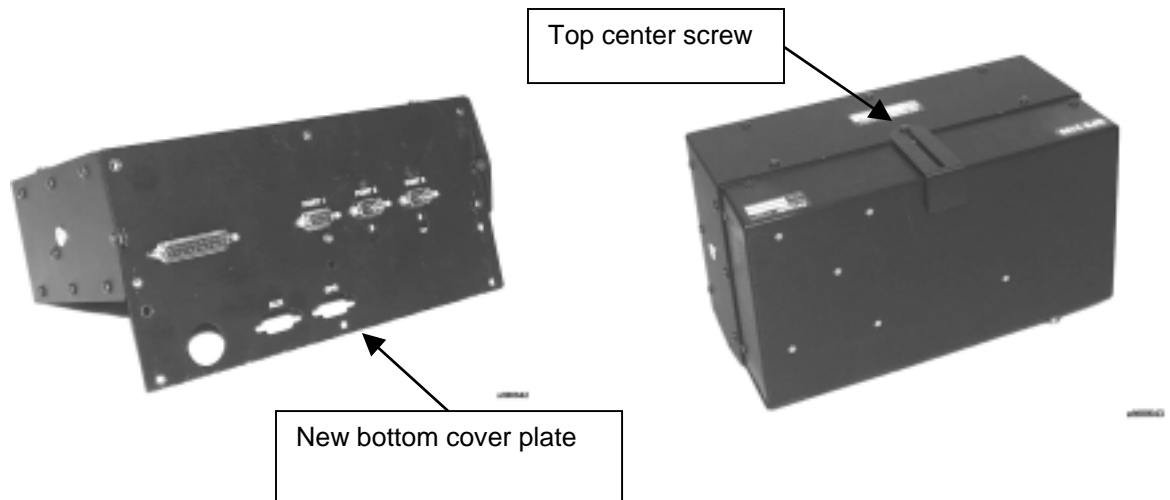
- Add-On GPS
 - Bottom cover plate
 - L-bracket with Velcro
 - Connector cable
 - Mounting U-bracket
 - Phillips screw driver
 - Window scraper
 - Two alcohol swabs
 - Clean, unused paper towels
- NOTE: The type of U-bracket will depend on your installation requirements.*



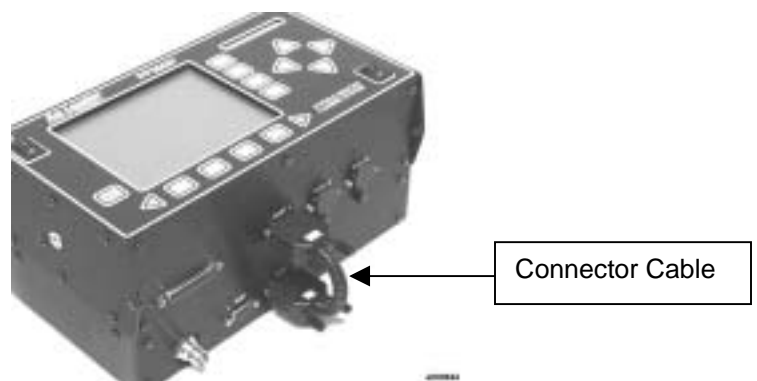
Perform the following steps to install the GPS in your vehicle:

NOTE: It is recommended that installation of Add-On GPS be done in a shop environment.

Step	Action
1	Remove 25-pin connector from PF3000.
2	Remove PF3000 from mounting bracket.
3	Where the PF3000 ports are located, remove and retain eight-bottom cover plate screw. <ul style="list-style-type: none"> • Four screws in each corner, two screws in the middle and two screws for the covers on Ports 2 and 3.
4	Remove and discard cover plate.



Step	Action
5	Position new bottom cover plate on PF3000 (as shown) so the 25-pin connector and Ports 1, 2 and 3 are aligned with their slots on the cover plate.
6	Re-install eight bottom screws. <i>NOTE: Ensure covers for Ports 2 and 3 are re-installed also.</i>
7	Position Add-On GPS to bottom cover plate so the GPS and AUX ports are aligned with GPS and AUX slots on cover plate.
8	Install six additional bottom cover plate screws.
9	Remove and retain top center screw on PF3000.
10	Position L-bracket slot over screw hole with solid part of bracket with Velcro strip on back of GPS. Squeeze L-bracket, GPS and PF3000 together and re-install screw.



11	Attach connector cable to Port 1 and GPS.
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Step	Action
	<i>NOTE: The mounting U-bracket that came with your PF3000 will not work with the Add-On GPS, you must install the new bracket.</i>
12	For U-brackets other than window mount brackets: <ul style="list-style-type: none"> • Remove existing U-bracket and retain fasteners. • Install new U-bracket with fasteners from old bracket • Attach PF3000 to the U-bracket and attach 25-pin connector.
13	For window mounted brackets: <ul style="list-style-type: none"> • Remove window mounting bracket and discard. • Completely remove old adhesive from window.

Updating Operating Program

The version of operating program that the monitor is using is displayed when you turn on the PF3000. You **MUST** have the 3.1 or later operating program for the PF3000 to use the Add-On GPS3000/3100.

For the Add-On GPS 3050 you must have version 3.13 operating system installed. To determine if version 3.13 is installed, press the MENU key until DIAG is displayed. Press the SYSTEM key. Look on the Program version line to determine the current program.

If you do not have the 3.1 or 3.13 or later version, contact **Ag Leader Technology** at 515-232-5363 to obtain an update.

Perform the following steps to install the new operating program:

Step	Action
1	Using a computer card reader, copy the file “upgrade.pld” to the memory card. Delete all other files off the card.
2	Install the card in the monitor and turn on the monitor.
3	The monitor will automatically detect a new operating program on the card. The monitor will display the version number of the current program and new program. Press the ACCEPT key to install the new version.
4	The monitor will erase the old program and install the new program.
5	Check some of the field and load information and settings to double check that the new programs is operating correctly

**Install Window
Mount PF3000
Bracket**

The window mount bracket for the Add-On GPS 3000/3050/3100, will provide a very secure mounting for the PF3000 ONLY IF the window glass surface is chemically cleaned. Some installers have reported problems with the adhesive strips coming off the glass. This is a problem only if the glass was not properly cleaned and dry. Follow Steps 1 through 6 to ensure the glass is clean and dry for installation:

Step	Action
1	In humid conditions where moisture may condense on the glass, run the air conditioner on a medium to warm temperature setting to fill the cab with dry air. Run air conditioner until the glass is dry.
2	Determine the position for the window bracket on the window.
3	Using a clean, unused paper towel, wipe off an area of the window larger than where you have determined is proper position for the bracket.
4	When the glass is visually clean, use one of the provided alcohol swabs to wipe a slightly smaller area.
5	Before the alcohol dries, use a clean, unused paper towel to wipe off the area.
6	Repeat Steps 4 and 5, so the glass has been cleaned twice with alcohol swabs.
7	Carefully remove the peel-off strips from the adhesive strips on the back of the PF3000. Do not touch the adhesive surface of the strips.
8	IMPORTANT: Once the adhesive strip contacts the glass the bracket cannot be moved without damage to adhesive strips. Without touching the strips to the glass, align the window bracket with the position you determined in Step 2.
9	When bracket is properly aligned, push the bracket firmly against the glass to bond the adhesive strips.
10	Use the heel of your hand or fist to gently pound on the bracket to ensure that the adhesive is fully bonded to the glass.
11	Attach PF 3000 to the bracket and attach 25-pin connector. <i>NOTE: The adhesive strips cannot be re-installed if they have pulled off the glass. Call Ag Leader Technology (515-232-5363) if you need new adhesive.</i>

Antenna Installation

Before mounting the Add-On GPS 3000/3050/3100 on your vehicle, the user should test the system in the planned installation location. Turn on all accessories or features of the vehicle that use electrical power, examples being lights, air-conditioners, etc. In order to determine your signal-to-noise-ratio (SNR) while installing your antenna, you must be on the GPS Diagnostic screen of the PF3000. To view this screen:

Step	Action
1	Plug antenna jack into GPS unit.
2	Press the Menu key until DIAG is displayed and press DIAG Key.
3	Press GPS key. <i>NOTE: An example of the GPS Diagnostic screen (Figure 1) is shown below.</i>
4	If the SNR drops below 6 or is lost completely, move the antenna to a location where the signal is not as affected by the interference. Moving the antenna horizontally or vertically between 1 to 3 ft will usually eliminate the problem.
5	Once you have completed positioning your antenna push EXIT key.

GPS DIAGNOSTICS	
UTC TIME	00:00:00
Latitude	0000.0000 S
Longitude	0000.0000 E
Elevation	0 ft
GPS speed	0.0 MPH
Number of satellites	0
Differential Status	OFF
Beacon/Sat. Frequency	0.000
Differential SNR	0.0
HDOP/PDOP	0.00/0.00
Antenna/Rcvr Voltage	5.00/13.73
<div style="display: flex; justify-content: space-between; margin-top: 20px;"> <div style="background-color: black; color: white; padding: 5px 10px; border: 1px solid black;">ADD-ON GPS</div> <div style="background-color: black; color: white; padding: 5px 10px; border: 1px solid black;">EXIT</div> </div>	

Figure 1. GPS Diagnostic screen

Parts, Tools for Antenna Installation

The following parts and tools are needed to install the antenna and its bracket:

- 5/16 in. self tapping bolts or 5/16 in. bolts with serrated nuts
- ¼ in. drill bit for thin metal or 9/32 in. for thicker metal
- 15 ft coaxial cable
- Three white cable tie-downs with self tapping screws
- Three white cable tie-downs
- L-bracket
- Antenna
- Marker
- Punch
- Hand drill

Installing the Antenna Bracket

Follow these steps to attach the L-bracket to the grain tank or bin extension (whichever is on your combine).

Step	Action	
1	Center the L-bracket on the combine making sure that it is in the center of header. If you are installing on a vehicle other than a combine, you may or may not be able to use the L-bracket. Make sure, though, that the antenna is in the center of the swath.	
2	Place the top surface of the bracket about ¼ in. above the top of the highest metal surface of the vehicle so that the antenna is the highest point of the vehicle and can slide off if struck.	
3	After you site this position, place the L-bracket against the metal surface, mark and punch the places you will be drilling.	
4	Drill the holes in the surface and attach brackets as follows:	
	If the metal is ...	Then use a...
	Thin	¼ in. drill bit and 5/16 in. bolts with serrated nuts.
	Thick (1/8 in. or more)	9/32 in. bit and self-tapping bolt.

**Installing
Antenna**

Follow these steps to install the antenna:

Step	Action
1	Center the antenna on the top the top surface of the bracket, placing the antenna so the cable connector is pointing towards the right side of combine or vehicle.
2	Attach the 15 ft cable to antenna, connecting the end with the plug to antenna.
3	Attach a white cable tie-down to metal surface 1 or 2 ft below and 6 in. to right of the L-bracket. <i>NOTE: you may need to increase the above distances, depending on the type of grain extension you are using.</i>
4	Place another white tie-down 3 to 5 ft. to the right of the first tie-down.
5	Use a cable tie and attach the coaxial cable to the first white tie-down leaving some slack in cable between antenna connection and tie down to allow for strain relief if the antenna is knocked off the L-bracket.
6	Use another cable tie to attach the cable to the second tie-down.
7	Route cable to cab using cable tie-downs to secure cable.

Routing the Cable to the Cab

You will need the following parts and tools to route the coaxial cable into the combine:

- Bulkhead connector (threaded on both ends)
- ½ in. drill bit
- Power drill

Follow these steps to route cable to the cab:

Step	Action
1	Find a place on the right side or bottom of the cab to route coaxial cable into cab (the point of entry is up to you). IMPORTANT: Do NOT route cable through a door or window because this will crimp the cable and ruin it.
2	Find a site to drill where you will not drill into any cabling or hoses; then drill a hole with the 1/2 in. bit. <i>NOTE: Make sure before you drill that:</i> <ul style="list-style-type: none">• <i>The coaxial cable will reach to the site you have chosen.</i>• <i>That you do not bend the cable at a 90-degree angle.</i>
3	Thread bulkhead connector through hole, so that the threaded end to which you attach the lock washer and jam nut is inside cab. <i>NOTE: For JD9000 series combines, a rubber grommet is included to mount the bulkhead connector through cab wall plate. Use auxiliary hole in the plate or drill a new hole if the auxiliary hole is in use.</i>
4	Attach the coaxial cable from the antenna to the outside end of the connector.

Overview

The Add-On GPS 3000/3050/3100 requires no initial setup to begin fieldwork. The PF3000 will display a “D” or “G” on the top right hand corner of the display to indicate a GPS signal. A “D” indicates that you have a differential signal. A “G” indicates that you have a GPS signal and your GPS receiver is tracking four or more satellites. A lower case “g” indicates that you have a GPS signal but your GPS receiver is tracking only three satellites. Your GPS receiver must track four or more satellites to get an elevation reading. You may wish to use the GPS to show your ground speed, which requires changing the ground speed sensor settings. Refer to Primary and Secondary Speed Sensor under Vehicle Setup in the PF3000 Operator’s manual for instructions.

NOTE: WAAS is an optional feature now available for use with the Add-On GPS. Contact Ag Leader Technical Support at 515-232-5363 for more information on this capability.

General Information

The following provides information to change factory settings on the Add-On GPS 3000/3050/3100:

Beacon Selection

The settings for beacon selection are Auto range, Auto Power and Manual.

- Auto Range: This is the default setting. In this setting the receiver keeps a record of the closest three beacons within the receivers range. It then selects a beacon based on the ranking of the beacon in memory.
- Auto Power: The receiver keeps a record of the three strongest beacons in its range. It then selects a beacon based on the ranking of the available beacons.
- Manual: Allows you to input frequencies for two beacons.

To change Beacon Selection complete the following steps:

Step	Action
1	Press Menu key on PF3000 until SETUP is displayed and press SETUP.
2	Press bottom left or right arrow key until GPS is displayed and press GPS key.

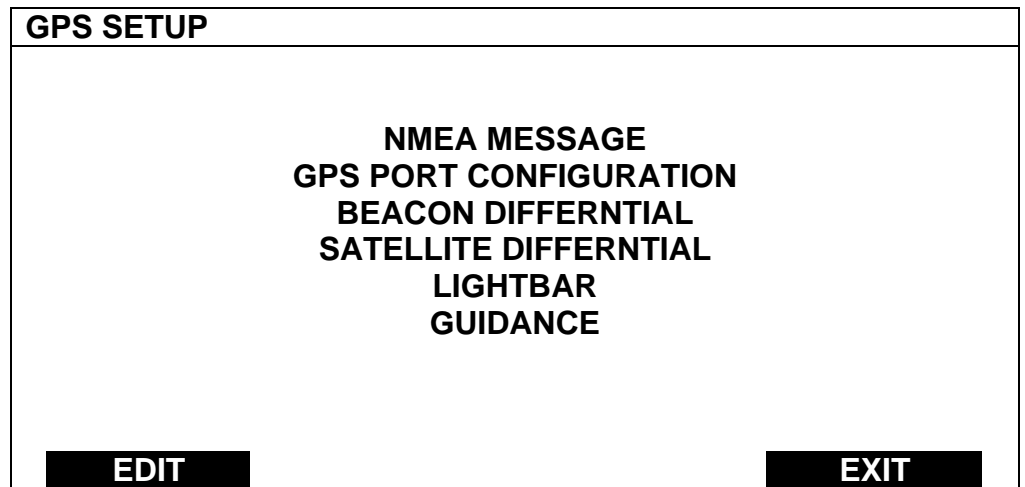


Figure 2. GPS SETUP Screen

3	From the GPS SETUP screen (Figure 2) scroll down to Beacon Mode and press EDIT key. Use up or down arrow keys to set mode.
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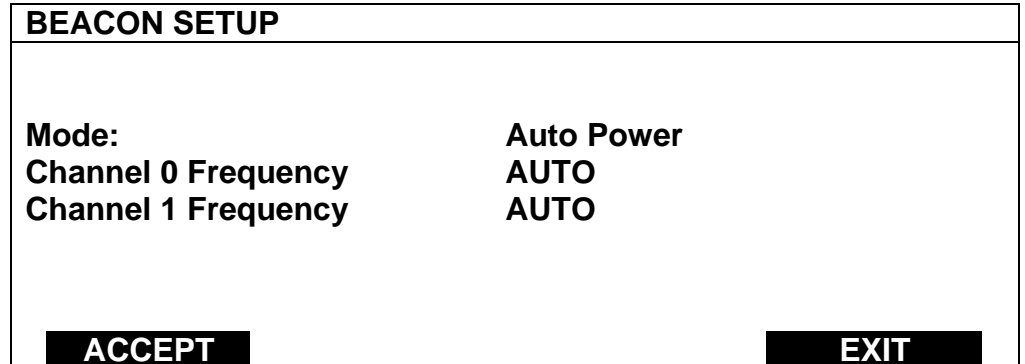


Figure 3. Auto Power Setting

4	After setting Auto Power (Figure 3) mode, push ACCEPT key and then EXIT.
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BEACON SETUP	
Mode:	Manual
Channel 0 Frequency	300.0
Channel 1 Frequency	300.0
ACCEPT	EXIT

Figure 4. Manual Setting

5	If you are setting to Manual (Figure 4) push ACCEPT key then use down arrow key to scroll to Channel 0 Frequency and press EDIT key. Use the up or down arrow key to set desired frequency and press ACCEPT key. Scroll down to Channel 1 Frequency and press EDIT key. Use up or down arrow keys to set desired frequency and press ACCEPT key.
6	Press the EXIT key two times to return to operating screen.

Age of Differential

Age of Differential is the delay setting used to continue logging data if Beacon or Satellite reception is lost.

Step	Action
1	At the GPS SETUP screen (Figure 5) scroll down to Satellite Differential Mode with down arrow key and press EDIT.
2	Scroll down to Age of Differential and press EDIT.
3	Use the UP or DOWN ARROW keys to set the time. <i>NOTE: If you are using Trimble firmware below version 1.50 you will be able to set the delay up to 90 seconds. If you are using version 1.50 or greater the value may be set as high as 250 seconds.</i>

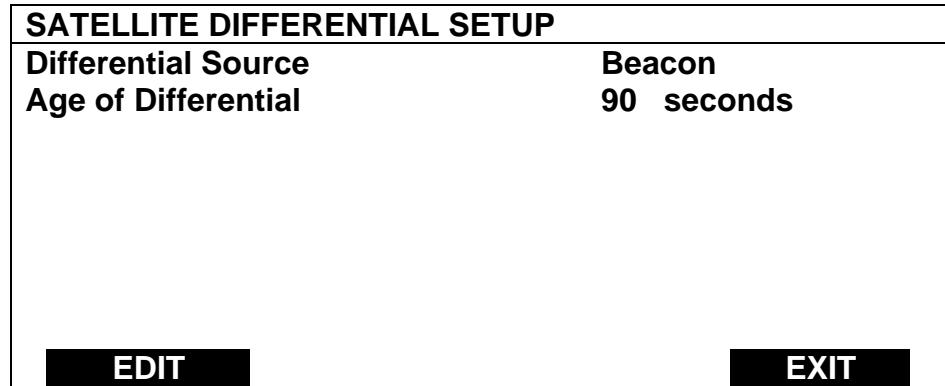


Figure 5. Setting Age of Differential for Add-On GPS 3000 and 3050

Satellite Selection This option is available on the Add-On GPS 3100 only. If you will be using the satellite differential option then do the following depending on which service provider you select.

Step	Action
1	Press Menu key on PF3000 until SETUP is displayed, press SETUP key.
2	Press bottom left or right arrow key until GPS is displayed and press GPS key.

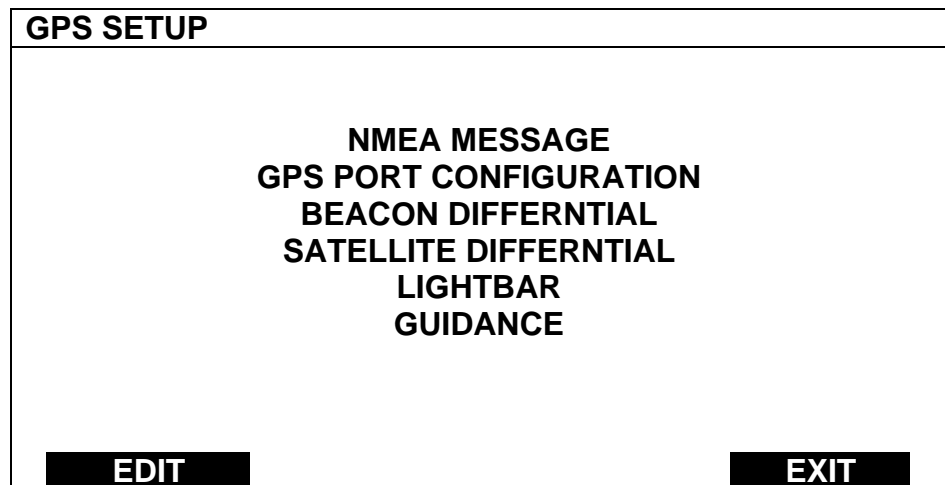


Figure 6. GPS SETUP Screen

3	At the GPS SETUP screen (Figure 6) scroll down to Satellite Differential Mode with down arrow key and press EDIT.
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SATELLITE DIFFERENTIAL SETUP	
Differential Source	Satellite
Differential Provider	Omnistar
Satellite Frequency	0000.0000
Satellite Baud Rate	0000
Provider User Code	0
OMNISTAR Code	000000000000000000000000
Age of Differential	90 seconds
EDIT	EXIT

Figure 7. Satellite Differential Setup Screen

If you will be using...	Then...
Omnistar	At SATELLITE DIFFERENTIAL SETUP screen (Figure 7) Differential Source will be highlighted, press EDIT key and use up or down arrow key until Satellite is displayed and press ACCEPT key. Scroll down to Differential Provider and press EDIT key. Use the up or down arrow key until Omnistar is displayed and press ACCEPT key. Scroll down to Satellite Frequency and press EDIT key. Use the up or down arrow key to select your region (Figure 78) and press ACCEPT key. Use the up or down arrow key to select your region and press ACCEPT key. If you will be using a custom frequency (Figure 9) with this provider, scroll down to Custom (1) and push EDIT NAME key. Use the up/down and left/right arrow keys to name this frequency. Push EDIT VALUE key and use the up/down and left/right arrow keys to enter the frequency. Push ACCEPT key. Your customized frequency should appear as the Satellite Frequency.

SATELLITE DIFFERENTIAL SETUP	
Omnistar Satellite Beacon Frequencies:	
Eastern USA	1556.825
Central USA	1554.497
Western USA (1)	1551.429
Western USA (2)	1551.489
Australia	1558.510
Europe	1531.230
South America (1)	1541.705
South America (2)	1541.715
Custom (1)	0000.0
Custom (2)	0000.0
EDIT	EXIT

Figure 8. Region Frequencies Screen

SATELLITE DIFFERENTIAL SETUP			
Omnistar Satellite Beacon Frequencies:			
Eastern USA	1556.825		
Central USA	1554.497		
Western USA (1)	1551.429		
Western USA (2)	1551.489		
Australia	1558.510		
Europe	1531.230		
South America (1)	1541.705		
South America (2)	1541.715		
Custom (1)	0000.0		
Custom (2)	0000.0		
EDIT	EDIT NAME	EDIT VALUE	EXIT

Figure 9. Custom Frequency Screen

	<p>Call the Omnistar subscription number (713-785-5850 in the USA) and give them the number to the right of the GPS serial number. Omnistar will then give you a 24-digit code. Key the code into the right of Omnistar Code (See Figure 10) using up and down arrow keys. Once the code is entered, press ACCEPT key to send the code to the unit. Now press EXIT key to return to GPS SETUP screen, press exit key to return to operating screen. After 30 minutes, the receiver should start receiving corrections and display a “D” in the upper right hand corner of the PF3000.</p>
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SATELLITE DIFFERENTIAL SETUP	
Differential Source	Satellite
Differential Provider	Omnistar
Satellite Frequency	1554.497000
Satellite Baud Rate	1200
Provider User Code	3466
OMNISTAR Code	000000000000000000000000
Age of Differential	90 seconds
ACCEPT	CANCEL

Figure 10.

Age of Differential

Age of Differential is the delay setting used to continue logging data if Beacon or Satellite reception is lost.

Step	Action
1	Scroll down to Age of Differential and press EDIT. See Figure 10.
2	Use the UP or DOWN ARROW keys to set the time. <i>NOTE: If you are using Trimble firmware below version 1.50 you will be able to set the delay up to 90 seconds. If you are using version 1.50 or greater the value may be set as high as 250 seconds.</i>

If you will be using RACAL...	Then...
RACAL	At SATELLITE DIFFERENTIAL SETUP screen (See Figure 7) Differential Source will be highlighted press EDIT key and use up or down arrow key until Satellite is displayed and press ACCEPT key. Scroll down to Differential Provider and press EDIT key. Use the up or down arrow key until RACAL is displayed and press ACCEPT key. Scroll down to Satellite Frequency and press EDIT key. Use the up or down arrow key to select your region (Figure 11) and press ACCEPT key. Use the up or down arrow key to select your region and press ACCEPT key. If you will be using a custom frequency (Figure 12) with this provider, scroll down to Custom (1) and push EDIT NAME key. Use the up/down and left/right arrow keys to name this frequency. Push EDIT VALUE key and use the up/down and left/right arrow keys to enter the frequency. Push ACCEPT key. Your customized frequency should appear as the Satellite Frequency.

SATELLITE DIFFERENTIAL SETUP	
RACAL Satellite Beacon Frequencies:	
North American East	1553.345
North American Mtn	1554.350
North American West	1556.225
Australia	1553.525
Europe	1531.210
South Africa	1552.640
Custom (1)	0000.0
Custom (2)	0000.0
Custom (3)	0000.0
Custom (4)	0000.0
ACCEPT	EXIT

Figure 11. Region Frequencies Screen

SATELLITE DIFFERENTIAL SETUP	
RACAL Satellite Beacon Frequencies:	
North American East	1553.345
North American Mtn	1554.350
North American West	1556.225
Australia	1553.525
Europe	1531.210
South Africa	1552.640
Custom (1)	0000.0
Custom (2)	0000.0
Custom (3)	0000.0
Custom (4)	0000.0
ACCEPT	EDIT NAME
EDIT VALUE	EXIT

Figure 12. Custom Frequency Screen

Call the RACAL subscription number (713-784-4482 in the USA) and give them the number to the right of the GPS serial number. RACAL will activate a code for the serial number that was given. After the serial number is called in, press the EXIT key (Figure 13) to return to operating screen. A “D” should appear in the upper right hand corner of the PF3000. Within 15 to 30 minutes the receiver should start receiving corrections from RACAL.

SATELLITE DIFFERENTIAL SETUP	
Differential Source	Satellite
Differential Provider	RACAL
Satellite Frequency	1553.345000
Satellite Baud Rate	1200
Provider User Code	8111
OMNISTAR Code	000000000000000000000000
Age of Differential	90 seconds
SUMMARY	CAL
SETUP	DIAG

Figure 13.

Age of Differential Age of Differential is the delay setting used to continue logging data if Beacon or Satellite reception is lost.

Step	Action
1	Scroll down to Age of Differential and press EDIT. See Figure 13.
2	Use the UP or DOWN ARROW keys to set the time. <i>NOTE: If you are using Trimble firmware below version 1.50 you will be able to set the delay up to 90 seconds. If you are using version 1.50 or greater the value may be set as high as 250 seconds.</i>

Optional WAAS Selection

NOTE: WAAS is an optional feature now available for use with the Add-On GPS. Contact Ag Leader Technical Support at 515-232-5363 for more information on this capability.

NOTE: Ag Leader Technology cannot guarantee the availability or performance of the WAAS signal or that it will continue to be free of charge.

If you are going to use the Optional WAAS differential option complete the following:

Step	Action
1	Press Menu key on PF3000 until SETUP is displayed, press SETUP key.
2	Press bottom left or right arrow key until GPS is displayed and press GPS key. You should now see the screen shown in Figure 14.

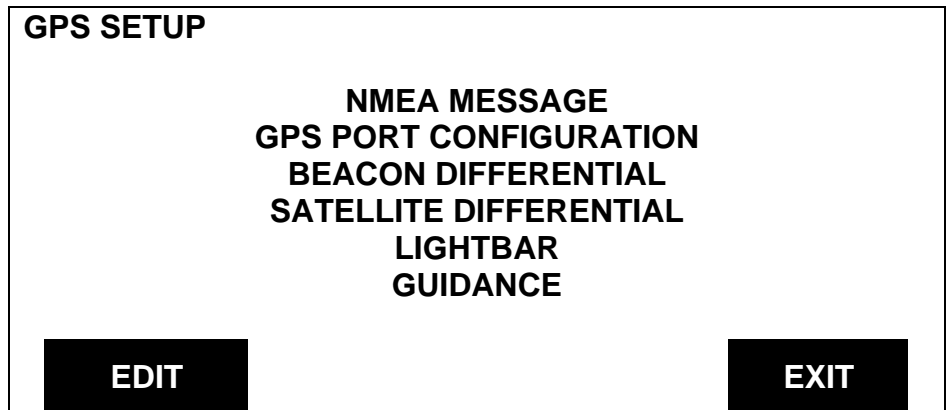


Figure 14. GPS SETUP Screen

Step	Action
3	At the GPS SETUP screen (Figure 14) scroll down to Satellite Differential Mode with down arrow key and press EDIT. You should now see the screen shown in Figure 15.

SATELLITE DIFFERENTIAL SETUP	
Differential Source	WAAS
Differential Provider	
Satellite Frequency	0000.0000
Satellite Baud Rate	0000
Provider User Code	0
OMNISTAR Code	000000000000000000000000
Subscription Expiration	00/00/0000
Ag of Differential	90 seconds
EDIT	EXIT

Figure 15. Satellite Differential Setup screen.

Diagnostic Screen

The diagnostic screen (Figure 16) provides troubleshooting and reference information for the Add-On GPS. Provided are definitions of screen terms.

GPS DIAGNOSTICS	
UTC TIME	00:00:00
Latitude	0000.0000 S
Longitude	0000.0000 E
Elevation	0 ft
GPS speed	0.0 MPH
Number of satellites	0
Differential Status	OFF
Beacon/Sat. Frequency	0.000
Differential SNR	0.0
HDOP/PDOP	0.00/0.00
Antenna/Rcvr Voltage	5.00/13.73
ADD-ON GPS	EXIT

Figure 16. GPS Diagnostics Screen


ADD-ON GPS DIAGNOSTICS		DG	
Product Id	AL 9001		
Trimble Firmware Version	1.50		
Firmware Date	03/15/01		
Receiver Serial Number	0224004738		
PV Filter Status	ON		
Everest Multipath	OFF		
Fast Update Rate	OFF		
Guidance Status	OFF		
			EXIT

Figure 17. Add-On GPS Diagnostic Screen

<p>UTC TIME: Greenwich Mean Time (GMT), the current time Greenwich, England <i>NOTE: The US Coast Guard may also refer to GMT as “ZULU”.</i></p>
<p>Latitude: Current latitude of the receiver in degrees-minutes.fractional minutes.</p>
<p>Longitude: Current longitude of the receiver in degree-minutes.fraction minutes.</p>
<p>Elevation: Current elevation of the receiver in feet.</p>
<p>GPS Speed: Current speed of the receiver in miles-per-hour.</p>
<p>Number of Satellites: Indicates the number of satellites the unit is using. The unit can track a maximum of twelve satellites.</p>
<p>Differential Status: Indicates ON or OFF, telling you whether a differential signal is being used.</p>
<p>Beacon/Satellite Frequency: Indicates the frequency of the differential source that the GPS is using of the location of the differential source.</p>
<p>Differential SNR: Signal-to-noise-ration (SNR) indicates the strength of the correction signal in relation to the amount of background noise that can interfere with signal reception. A good SNR is 10 to 18.</p>
<p>HDOP/PDOP: Horizontal Dilution of Precision (HDOP) indicates the quality of the horizontal GPS position. Position Dilution of Precision (PDOP) is a unitless measure indicating when the satellite geometry can provide the most accurate results. When satellites are spread around the sky, the PDOP value is low and the computed position is more accurate. When satellites are grouped close together the PDOP is high and the positions are less accurate.</p>
<p>Antenna/Receiver Voltage: An antenna/receiver voltage of 5 or higher indicates that the antenna is not plugged into the GPS receiver. When the antenna is properly installed, the voltage should read .5 or less.</p>

NMEA Messages The Add-On GPS unit uses Trimble TSIP to provide position information to the PF3000. This means that NMEA messages (Figure 18) do not need to be set and will not be displayed on the NMEA diagnostic screen.

NMEA MESSAGES	
GGA	ON
GLL	OFF
VTG	ON
GSV	OFF
GSA	OFF
ZDA	OFF
ALM	OFF
RMC	OFF
MSS	ON

EDIT **EXIT**

Figure 18. NMEA Messages Screen

**GPS
Output/Input**

The GPS Output/Input screen (Figure 19) requires no adjustment at this time. This screen will be used for future options for the AUX Port of the GPS.

GPS OUTPUT/INPUT SETUP	
Output rate	1Hz
Port	AUX
Output baud rate	4800
Output type	NMEA
Input baud rate	9600
Input type	TSIP

SUMMARY **CAL** **SETUP** **DIAG**

Figure 19. GPS Output/Input Setup Screen

Troubleshooting The following is a list of problems that you may encounter with the Add-On GPS 3000/3050/3100 and suggestions for troubleshooting. If you have a problem with the system, please review the list before calling **Ag Leader Technology**. If your troubleshooting does not solve the problem, please call Technical Support at **Ag Leader Technology** (515-232-5363).

Problem	Cause	Solution
Differential correction fades in and out	<ul style="list-style-type: none"> • A strong thunderstorm or disturbance is near or located between antenna and differential source. • You are in a fringe area for reception. • Interference from your vehicle or machinery. 	<ul style="list-style-type: none"> • The thunderstorm must pass or decrease in intensity. • Determine if there are thunderstorms in the vicinity or call Ag Leader Technology to see whether the beacon near you is operational. • Move the antenna to a position where it is not as strongly affected by the interference. • Adjust your Age of Differential to 90 seconds or 250 seconds depending on your firmware.
The Add-On GPS 3000/3050/3100 will not stay locked on a beacon and switches erratically back and forth from one beacon to another.	<ul style="list-style-type: none"> • Either one or more of the beacons has an unhealthy or unmonitored status or there is a large amount of interference in the signal from a certain beacon. 	<ul style="list-style-type: none"> • Press the Menu key until SETUP is displayed. Press SETUP key. GPS is displayed. Press GPS key. Scroll down to Beacon Mode, the user has two options (See Beacon Selection in General Information section): • Select Auto power • Select Manual mode. Manual mode is the best choice in this case if the user has a beacon that they know is providing a good signal.
		<ul style="list-style-type: none"> • Press the EXIT key. The display returns to the startup screen and within about one minute or less the unit will lock on to the selected frequency.

Problem	Cause	Solution
When the Add-On GPS is used on a vehicle, such as a truck or car, the SNR for the beacon being used is very low or the unit cannot lock on a differential correction.	<ul style="list-style-type: none"> Electrical noise generated by the vehicles electrical system. 	<ul style="list-style-type: none"> Move the antenna to a location that is not affected. Use a line filter on main power to unit. Attach a 6 inch or 12 inch square sheet of metal to the vehicle for mounting the antenna on to aid in blocking interference.
Antenna voltage indicates 5 volts or more.	<ul style="list-style-type: none"> Loose connection. Antenna is malfunctioning. 	<ul style="list-style-type: none"> Check bulkhead connection. Check antenna connections.
Near dusk the Add-On GPS loses differential or switches erratically from beacon to beacon for about one half-hour.	<ul style="list-style-type: none"> Changes in atmospheric properties near dusk affect signal quality and can induce skipping of signals that usually can be received. 	<ul style="list-style-type: none"> Set unit in Manual Mode on the BEACON OPTIONS screen to help keep the correction the user receivers more consistent. This is an operational characteristic that can not be eliminated.
When the lights on a vehicle, specifically the combine, are turned on the SNR value drops considerably or differential correction is lost completely	<ul style="list-style-type: none"> The load on he electrical system has increased and noise has been introduced into the system. 	<ul style="list-style-type: none"> Check the alternator to see whether it is in satisfactory condition and whether its capacity is correct for the loads it must carry.
Monitor dims when using external power source for PF3000.	<ul style="list-style-type: none"> External power source for PF3000 does not provide enough power. 	<ul style="list-style-type: none"> New external power source is available to support Add-On GPS to PF3000.
After powering up the PF3000 with Add-On GPS you are unable to enter the GPS setup screen.	<ul style="list-style-type: none"> PF3000 did not properly detect the Add-On GPS. 	<ul style="list-style-type: none"> Power the PF3000 down and then restart. Ensure the connector cable between the PF300 and GPS is properly connected. If these actions fail, please call Technical Support at 515-232-5363.

Add-On GPS 3000/3050/3100

Ag Leader Technology

Parts List

Parts List—Add-On GPS 3000/3050/3100		
Part Name/Description	Part Number	Quantity
Installation/Instructions		1
GPS receiver unit		
Model3000	3000120	1
Model3050	3000138	1
Model3100	3000121	1
Pivot Bracket	2000162	2
Bottom Cover Plate	3000118	1
Antenna assembly		
GPS2000 or,	2000179	1
GPS2100	2000192	1
Antenna Bracket (L-shape)	2000161	1
L-Bracket with Velcro	3000125	1
Add-On GPS cable kit	3000501	1
Antenna Installation Kit	2001310-1	1
5/16 in. self tapping bolts		4
5/16 in. hex bolts		4
5/16 in. serrated nuts		4
White cable tie down		3
#10 self tapping screw		3
Bulkhead connector		1
Grommet--1/2 in. inside diameter		1
Cab/Cable Kit		1
Cable ties—6 in.		
Cable ties—15 in.		
Alcohol swabs		2
Cable clamps		

Beacon Information

In the USA, call 1-703-313-5900 for Coast Guard GPS support.
 Or use the web site at <http://www.navcen.uscg.mil/gps/status/txt> for the operation status of the beacon stations.

Atlantic Coast			
Location	ID	Baud Rate	Frequency
Brunswick, ME	800	100	316
Cape Canaveral, FL	809	100	289
Cape Henlopen, DE	805	200	298
Reedy Point, DE	870	200	309
Alexandria, VA	820	100	305
Cape Henry, VA	806	100	289
C2Cen, Portsmouth, VA	821	200	313
Charleston, SC	808	100	298
Diver, VA	806	100	289
Chatham, MA	802	200	325
Fort Macon, NC	807	100	294
New Bern, NC	771	100	294
Miami, FL	810	100	322
Monriches, NY	803	100	293
Penobscot, ME	799	200	290
Portsmouth, NH	801	100	288
Hudson Falls, NY	844	200	324
Annapolis, MD**	847	200	301
Savannah, GA	818	100	319
Macon, GA	822	200	301
Sandy Hook, NJ	804	200	286

Gulf Coast			
Location	ID	Baud Rate	Frequency
Aransas Pass, TX	816	100	304
Egmont Key, FL	812	200	312
Galveston, TX	815	100	296
Key West, FL	811	100	286
Mobile Point., AL	813	100	300
Millers Ferry, AL	865	200	320
English Turn, LA	814	200	293
Puerto Rico	818	200	295

*Engineering Test Site (Not fully operational, only in test mode)

**Under Construction

Great Lakes			
Location	ID	Baud Rate	Frequency
Cheboygan, MI	836	200	292
Detroit, MI	838	200	319
Milwaukee, WI	833	100	297
Neebish Island, MI	835	200	309
Saginaw Bay, MI	837	100	301
Sturgeon Bay, MI	832	100	322
Upper Keweenaw, MI	831	100	298
Whitefish Pt., MI	834	100	318
Wisconsin Pt., WI	830	100	296
Youngstown, NY	839	100	322

Pacific Coast			
Location	ID	Baud Rate	Frequency
Chico, CA	878	100	318
Cape Mendocino, CA	885	100	292
Pigeon Point, CA	883	100	287
Point Arguello, CA	882	100	321
Point Blunt, CA	884	200	310
Point Loma, CA	881	100	302
Fort Stevens, OR	886	100	287
Appleton, WA	871	100	300
Robinson Point, WA	887	200	323
Spokane, WA*	848	100	316
Whidbey Is., WA	888	100	302

Alaska			
Location	ID	Baud Rate	Frequency
Annette Island, AK	889	100	323
Biorka Island, AK*	821	200	313
Cape Hinchbrook	894	100	292
Cold Bay, AK	898	100	289
Gustavus, AK	892	100	288
Kenai, AK	896	100	310
Kodiak, AK	897	100	313
Potato Point, AK	895	100	298

*Engineering Test Site (Not fully operational, only in test mode)

Hawaii/Puerto Rico			
Location	ID	Baud Rate	Frequency
Isabella, Puerto Rico	817	200	295
Kokole Point, HI	880	200	300
Upolo Point, HI	897	100	286

Inland			
Location	ID	Baud Rate	Frequency
St. Louis, MO	862	200	322
Kansas City, MO	867	200	305
Vicksburg, MS	860	200	313
Memphis, TN	861	200	310
Hartsville, TN	858	100	317
St. Paul, MN	864	200	317
Sillisaw, OK	866	200	299
Millers Ferry, AL	865	200	320
Billings, MT	874	100	313
Clark, SD	850	100	309
Louisville, KY	869	200	290
Rock Island, IL	863	200	311
Omaha, NE	868	200	298
Whitney, NE	859	200	310
Flagstaff, AZ	876	100	319
Kirkland, NM	845	100	291
Polson, MT*	849	100	287
Summerfield, TX	823	100	318

*Engineering Test Site (Not fully operational, only in test mode)

Canada		
Location	Baud Rate	Frequency
Alert Bay, BC	200	309
Amphitrite Point, BC	200	315
Richmond, BC	200	307
Sandspit, BC	200	300

Canada		
Location	Baud Rate	Frequency
Partridge Island, NB	200	295
Point Escuminiac, NB	200	319
Cape Ray, NF	200	290
Cape Race, NF	200	288
Cape Norman, NF	200	310
Fox Island, NS	200	307
Western Head, NS	200	312
Cardinal, ON	200	306
Warton, ON	200	286
Lauzon, PQ	200	309
Moisie, PQ	200	313
Riviere du Loup, PQ	200	300
St. Jean sur Richelieu, PQ	200	296
Trois Rivieres, PQ	200	321

NOTE: Ag Leader Technology cannot guarantee the availability or performance of the WAAS signal or that it will continue to be free of charge.

WAAS	
AOR-W (PRN 122)	POR (PRN 134)

OMNISTAR	
Region	Frequency
Eastern USA	1556.825
Central USA	1554.497
Western USA	1551.489
Europe	1531.230
Australia	1555.255
Indian Ocean	1538.050
Atlantic Ocean	1541.705 & 1541.715

RACAL	
Region	Frequency
USA East	1553.345
USA Mountain	1554.350
USA West	1556.255
Europe	1531.210
8.5 Australia	1555.330

Add-On GPS3000/3050/3100 Owners Registration

You will NOT receive upgrade/update information of this product if you are not registered.

Return this sheet in the enclosed postage-paid envelope or by fax.

(Outside the USA 011) -1- 515-232-3595 - fax

Ag Leader Technology
2202 South Riverside Drive
P.O. Box 2348
Ames, Iowa 50010

Name: _____

Street Address: _____

City, State, Country: _____

Postal or USA ZIP code: _____

Phone # (including Country code or USA area code): _____

Mobile Phone #: _____ Fax #: _____

Email address: _____

Ag Leader Dealer: _____

Dealer Address: _____

Intended Use (Please circle all that apply): Combine Sprayer Planter ATV
Other, please specify _____

PF3000 Serial #: _____

Add-On GPS3000 Serial # _____ Antenna Serial # _____

Add-On GPS3050 serial # _____ Antenna Serial # _____

Add-On GPS3100 Serial # _____ Antenna Serial # _____

Summary of Changes

June21, 2001	Rev. 1	Updated the Beacon Information, added WAAS information and setup and how to set Age of Differential.
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