MICROLOGIC SUPERSPORT GPS NAVIGATOR

OPERATOR'S GUIDE

MICROLOGIC
SUPERSPORT GPS NAVIGATOR
OPERATOR'S GUIDE

INDEX

		PAGE
STARTUP		
1.	First Start	4
2.	Normal Startup	6
3.	Display and Keyboard Light	6
4.	Entering Numbers	7
5.	Magnetic Variation	9
NAVIGATION DISPLAYS		
6.	Position	9
7.	Speed and Course	12
8.	Navigation (Steering)	12
9.	Warning Indicator	16
10.	Waypoint Sequencing	17
11.	The Route Function	19
ALERTS		
12.	Waypoint Arrival Alert	21
13.	Cross Track Error Alert	22
14.	Anchor Watch Alert	22
15.	Automatic Shutoff Alert	23
16.	Low Battery Alert	23
WAYPOINTS		
17.	Waypoint Names and Numbers	24
18.	Entering Waypoints in Lat/Lon	26
19.	Entering Present Position in a Waypoint	26
20.	Making a Waypoint a Specified Range and Bearing From Another Waypoint	27
21.	Steering Directly to a Waypoint	27
22.	Entering Waypoints in MGRS Coordinates	28
23.	Entering Waypoints in UTM Coordinates	32
24.	Entering Waypoints in TD Coordinates	32
THE SAVE FUNCTION		
25.	Saving Locations	35
26.	Man Overboard	35
27.	Recalling Locations	36

28. Navigating to Saved Locations 36
29. Moving Saved Locations into Permanent Waypoints 36

ADDITIONAL PROCEDURES

30. Entering the Identification Message 37
31. Waypoint Security - Entering the Key 38
32. Locking and Unlocking Waypoints 100 - 199 39
33. Yacht Racing Timer 40
34. Lat/Lon Offsets 40
35. Changing the Distance and Speed Format 41
36. Changing the Altitude and Accuracy Format 42
37. Coordinate Conversion - Lat/Lon, MGRS, UTM, and Loran TD 42
38. System Test and Performance 43
39. Serial Data Output 44
40. Summary of SETUP Functions 45
41. Summary of Displays 47

SEE OPERATOR'S MANUAL
FOR COMPLETE INFORMATION

WARNING

The SuperSport is only an aid to navigation and does not reduce the need for caution or judgement. No electronic navigation system is perfectly reliable; outputs may occasionally be incorrect. The prudent navigator should never rely solely on one device to the extent of endangering life or property.

MICROLOGIC
SuperSport GPS

1 FIRST START (For initial installation and trouble starts only)

WARNING Don't do this every time you turn the GPS on! Do it only once to start up a new unit for the first time. This procedure will clear all the waypoints. A more detailed description of the First Start procedure, with examples, is given in the Operator's Manual.

a) TURN POWER ON
Press the ON/OFF key briefly

NOTE: The SuperSport is turned off by pressing the ON/OFF key and holding it down for three seconds.

b) CLEAR MEMORY

Press the CLR key and hold it down for six seconds. In approximately six seconds, the Identification Message (see Section 30) will appear. The waypoints now have been cleared and the set-up items have been set to their initial or FIRST- START values.

c) ENTER YOUR LOCAL TIME

You need to do this only ONCE with a new receiver, as time will be kept afterward, even with power off. Time is shown in the first display under the SETUP key, and must be entered in the following order:

1	Time Zone	
2	Standard or Daylight (Summer) time	
3	Time of day	These will probably be correct already and will not need to be re-entered
4	Day of Week	
5	Month	
6	Day of month	
7	Year	

The time will now be kept correctly even with power off, and will be updated so that the time is accurate to within one half second, as soon as you start receiving satellites.

If you later change time zones, or from Standard to Daylight time, it is necessary to change only the time zone or daylight-standard selector. The local time of day will automatically be corrected when you make the change.

d) ENTER YOUR APPROXIMATE LAT/LON These must be accurate to within ten degrees.

EXAMPLE: Latitude 34° North
Longitude 077° West

Display present position Lat/Lon

Enter Latitude

Enter Longitude

For small numbers of degrees, leading zeroes must be entered. North Latitude and West Longitude are automatically entered unless the "-" key is pressed at any time during the entry of numbers. The "-" key specifies South Latitude or East Longitude.

e) ENTER YOUR ALTITUDE, OR SELECT AUTOMATIC ALTITUDE (3D) MODE

If you are operating the SuperSport on a boat on the ocean, enter the height of the antenna above the water line into altitude, on the first POS display. If your altitude is changing with time, or if you do not know what it is, you can set the GPS to compute altitude automatically. To do this, select the "ALTITUDE/VEHICLE" display in the SETUP list.

Now, set ALTITUDE to AUTO, and set VEHICLE to BOAT, CAR, or PLANE.

YOU CAN ALWAYS COMPUTE YOUR ALTITUDE AUTOMATICALLY. HOWEVER, IF YOUR ALTITUDE IS CONSTANT, AND YOU KNOW WHAT IT IS, OPERATING IN THE MANUAL ALTITUDE MODE WILL MAKE THE COMPUTED LAT/LON SLIGHTLY MORE STABLE AND ACCURATE.

Altitude and Lat/Lon accuracy can both be set to display in meters instead of feet. This can be done with the "ALT/ ACC" format selector, which is the third item in the SETUP list.

f) IF YOUR ARE USING THE GPS FOR MARINE NAVIGATION, YOU ARE NOW FINISHED WITH THE FIRST START PROCEDURE.

If you are using the GPS for terrestrial or airborne navigation, and you want the best possible correspondence of displayed position with respect to your charts, read Sections 3 and 11 of the Operator's Manual.

g) WAIT UNTIL THE DISPLAY STOPS FLASHING BEFORE USING THE NAVIGATION OUTPUTS.

Whenever the GPS displays outputs that are likely in error, the display will flash on and off.

NEVER USE FLASHING DISPLAYS FOR NAVIGATION PURPOSES

2 NORMAL STARTUP

Turn power ON and wait for the display to stop flashing (normally 1 to 3 minutes).

3 DISPLAY AND KEYBOARD LIGHT

To read the display or use the keyboard at night, press the LIGHT key. The light will come on, and will automatically turn off 20 seconds later. If keys are pressed, the time will be extended to 20 seconds after the last key was pressed. If the LIGHT key is pressed when the light is on, it will turn off. The 20 second time can be changed to 5-255 seconds, using the SETUP item "LIGHT TIME". If the unit is used with external power, the lights will stay on indefinitely after being turned on.

4 ENTERING NUMBERS

There are four basic steps involved in entering numbers

1. Select the function you want to enter new numbers into. For example suppose we want to enter the number 27 into the "TO" display. First we select "ROUTE"

Press key one or more times until desired display appears.

A display similar to this will appear.

```
FR   7 → TO 125
 JETTY → ROCKS
    6.93 nm 284°
ROUTE  1     OFF
```

2. Press the "CLR" key one or more times until the input area you want is filled with small zeroes. Repeated pressing of the "CLR" key steps through all possible entry fields.

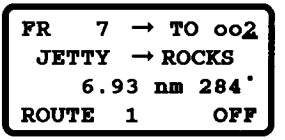
The display will look like this:

```
FR   7 → TO 00̲
 JETTY → ROCKS
    6.93 nm 284°
ROUTE  1     OFF
```

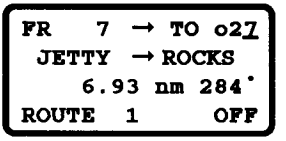
The small zero on the right is underlined, and flashes on and off. This is the cursor, which shows where the next digit will be entered.

3. Press the keys with the numbers on them and the numbers will be put in the input area. "TO" "FROM" and "WPT" (Waypoint Number) are put in from the right so you can enter 1,2, or 3 digits. Other inputs are put in from left to right, so you don't have to enter a lot of zeroes. You can always see what numbers you've got by looking at the display.

The display will look like this:

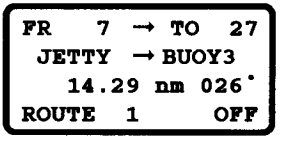


The display will look like this:



4. When the numbers you want are on the display, press the "ENT" key.

The navigator will stop displaying the flashing cursor, and the display will be as shown.



The number is now entered into memory. If you make a mistake during entry, press the "CLR" key, and the entry will be backspaced one digit. If you press any of the display keys during the entry procedure, no entry will be made, and the display of the selected function will appear.

ADVANCED TECHNIQUE

Numbers can be entered without pressing the "CLR" key first. In this case, the next entry function in the normal entry sequence is chosen. Pressing the "CLR" key is useful to show what entry function is next, and for sequencing through all possible functions. To illustrate this, in the example above, "TO" could have been set to 8 by pressing:

5 MAGNETIC VARIATION

Magnetic Variation is normally computed automatically. However, if you want Magnetic Variation to be zero (True North bearing), or if you want to set the variation manually, do the following:

a) Display SET-UP List by pressing the "SETUP" key twice. Now press the + key one or more times until the mag netic variation control appears.


```
ANCHOR WATCH
OFF, RANGE  0.10
auto magvar   ON
mag var     e014°
```

b) To set magnetic variation to manual, turn "auto magvar" to OFF.

You can enter numbers into "mag var" only if "auto magvar" is OFF.

c) Enter Magnetic Variation in degrees. Press the "-" key for East Variation.

6 POSITION

Latitude, Longitude, L/L Accuracy, and Altitude


```
LAT n 34°13.294'
LON w118°35.528'
L/L +/-   156 ft
ALTITUDE  293 ft
```

a) The example above is with the SET-UP function LL FORMAT (Latitude/Longitude Format) in degrees, minutes and decimal minutes = MM.MMM. To display degrees,

minutes, seconds, and decimal seconds, set LLF = MM SS.S, as follows: NOTE: At FIRST START, Lat/Lon will be shown as MM.MMM. If you want MM SS.S, do the following:

Select LL Format Control

```
LL FORMAT  MM.MMM
DIST/SPD   nm/kts
ALT/ACC      feet
```

Set LL Format to MM SS.S

The Lat/Lon from the previous example would then be displayed as follows:

```
LAT n 34°13'16.2
LON w118°35'31.8
L/L +/-    156 ft
ALTITUDE   293 ft
```

The above display shows estimated Altitude and Lat/Lon accuracy in feet. The third line of the SETUP display shown above reads "ALT/ACC feet" This can be changed to "ALT/ ACC meters" and the POS displays will show Alt. and accuracy in meters, with the notation "m" instead of "ft."

Number of Satellites Received and Available, Average Signal Quality, and Map Datum.


```
Sats Received   4
Sats Available  5
SignalQuality  99
Datum       WGS-84
```

This display shows how many satellites are being received, and how many can be received. The example display above shows 4 out of 5 available satellites being received. The satellites rise and set like the sun, moving across the sky twice each day. The number of satellites available is not constant, but changes with time. If fewer than 3 satellilte are available, the navigator will not have enough signals to get a position fix.

The Signal Quality should read 80 or higher when the antenna is still, and will drop to 50 - 70 on a boat with

heavy pitching and rolling. If it reads less than about 30, you will not have reliable navigation.

The bottom line of the display shows the Map Datum. This is a mathematical description of the shape of the Earth, and is specified in the margins of each navigation chart. The datum is in the SETUP list, and should be selected to match the chart you are using. WGS-84 is used on most modern marine charts.

Present position can also be displayed in Universal Transverse Mercator, in Military Grid Reference System, and in Loran Time Difference Coordinates.

Since these coordinate systems are used only for special applications, they are displayed only if SETUP items controlling them are turned on. If the SETUP item "MGRS/UTM" is turned ON, then the following displays are included under the POS key.


```
MGRS          80355
38 R KR       14649

Datum         WGS-84
```

MGRS easting, grid zone, northing.

Map datum.


```
UTM           280355
38 R         3014649
C.Meridian e051°
Datum         WGS-84
```

UTM easting 100,000 meter square designator, northing, central meridian, map datum. The central meridian is always selected automatically.

If the SETUP item "LORAN TD" is turned ON, then the following displays are included under the POS key.

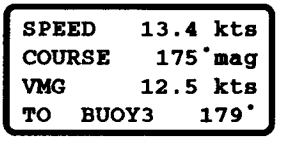

```
LORAN TDs   S1 26
GRI  9940   S2 39
TD1       28171.43
TD2       41218.94
```

S1, S2 and GRI must be input manually. S1 & S2 select the two secondaries and are the smallest TD value, in milliseconds for that secondary. TD1 & TD2 are the two time differences for present position. (See Section 24 for information on how to select GRI, S1 & S2)

7 SPEED AND COURSE

Speed over the ground, course over the ground, and velocity made good.

SPEED

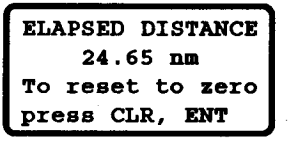


The speed over the ground is 13.4 knots, and the course over the ground (with respect to magnetic north) is 175°. The Velocity Made Good, or the speed over the ground in the direction of the "TO" waypoint, is 12.5 knots. The VMG display is negative if you are headed away from the "TO" waypoint. The "TO" waypoint is named BUOY3, and the bearing to that waypoint is 179 degrees.

The displayed speed and course are normally filtered over a time of two seconds. The speed filtering time is adjustable from 1 - 255 seconds by the SETUP item SPEED AND COURSE FILTER. A longer filtering time of 10-20 seconds is useful to smooth the variations in speed and course caused by pitching and rolling of a boat, if it is necessary to mount the antenna high off the deck.

Elapsed Distance

SPEED



The Elapsed Distance is exactly the same as the odometer on an automobile. The distance reading is the distance travelled since the number was last set to zero. This will enable you to keep track of your trip distances and fuel consumption.

8. NAVIGATION (STEERING)

The navigation displays show how to steer toward a waypoint, or between two waypoints.

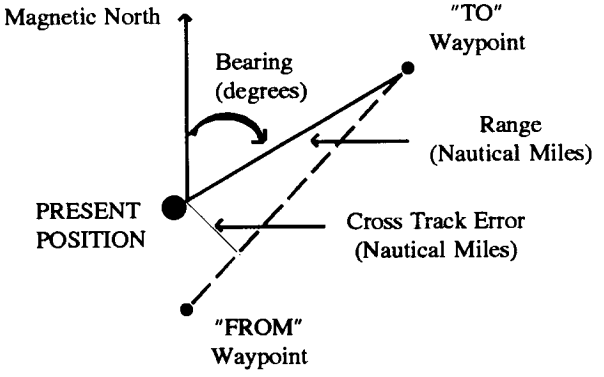
WAYPOINTS

A waypoint is a location specified by its Latitude and Longitude or by other coordinates. There are 251 waypoints in the GPS, which are numbered 0 to 250. A waypoint position can be set into the GPS by pressing numbers on the keyboard, or by loading present position into the waypoint. The waypoints remain, even after power is turned off. "TO" and "FROM" are numbers which select two waypoints for navigation. "TO" can be 1-250, and "FROM" can be 0-250.

To compute Range and Bearing, you must have set the "TO" number and entered a latitude and longitude, or other pair of coordinates, into the waypoint. To compute cross track error and time-to-go, you must also have set the "FROM" number and entered a pair of position coordinates into that waypoint.

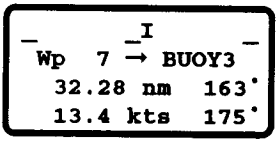
SIMPLIFIED CROSS TRACK ERROR AND TIME TO GO

When the waypoint memory is cleared in the FIRST START procedure, the "FROM" number is set to 0, which is a special waypoint that is automatically set to your present position each time you change "TO" or the position of the "TO" waypoint. The following procedure can save time. If you set only the "TO" waypoint and leave the "FROM" number set to zero, cross track error will be computed with reference to the place you start from. For this reason, waypoint zero is automatically given the name "START".



Range and Bearing to the "TO" Waypoint From Present Position

NAV



Steer right - you are 0.04 miles left of track. Your courseline is from waypoint number 7 to waypoint BOUY3. Your destination waypoint is 32.28 miles away at a magnetic bearing of 163 degrees. Your speed over the ground is 13.4 knots, and your magnetic course is 175 degrees. If the FROM or TO waypoint has been named, the name will be shown in the FROM or TO field. If it has not been named, its number will be used.

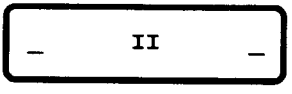
If you press the + key while showing this display, the TO waypoint will be changed to the next higher numbered waypoint, and the FROM waypoint will be set to the old TO waypoint. (Empty waypoints, those with Lat/Lon of zero, will be skipped.) Pressing the - key will result in a similar change, except the next lower numbered waypoint (that is not empty) will be chosen.

EXPLANATION OF GRAPHIC STEERING DISPLAY

The vertical bar on the upper display shows Cross Track Error in increments of 0.02 nautical miles, with normal scaling. The scaling can be changed under the fourth display in the SETUP list. If cross track error is greater than the maximum scale value, the graphic display will be at the limit.

Steer right - you are 0.32 nautical miles or more to the left of the desired track.

If you are on course the cross track error will be zero and the Graphic display will show two vertical bars in the center.



ON COURSE - Cross Track Error is less than +/- 0.01 nautical miles

TO ZERO CROSS TRACK ERROR

You can set Cross Track Error to zero and establish a new track by doing the following: Press the ROUTE key several times until the following appears:


```
TO RESTART CTE
HERE, PRESS ENT
SC OFF PRO  0.00
SEQ OFF RNG 0.20
```

Press the "ENT" to set waypoint zero to present position, set "FROM" = 0, and zero Cross Track Error.


```
NEW TRACK BEGUN
CTE SET TO ZERO
```

3 second display

SPECIFIED COURSE ANGLE

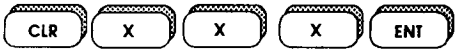
Cross Track Error is the distance to the right or left of the desired track, which is normally the line from the "FROM" waypoint to the "TO" waypoint.

You can, however display Cross Track Error with respect to a line at a Specified Course Angle going through the "TO" waypoint. This allows you to approach your destination from a desired bearing. In this case, the "FROM" waypoint is not used.

To use a specified course angle, press the "ROUTE" key twice, and the following display will appear.


```
TO RESTART CTE
HERE, PRESS ENT
SC OFF PRO  0.00
SEQ OFF RNG 0.20
```

Enter the specified course angle (Degrees Magnetic).

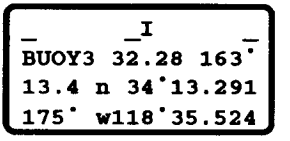


xxx-000-359

Cross track Error will now be displayed with respect to the great circle going through the "TO" waypoint at the specified magnetic bearing.

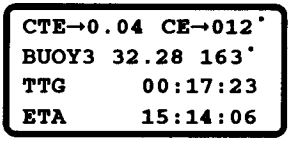
To turn off Specified Course Angle:

The second NAV display shows more navigation information.



This display shows graphic crosstrack error, the TO waypoint, speed and course, and present position latitude and longitude.

The last NAV display shows crosstrack error, course error, range and bearing to the TO waypoint, time to go the TO waypoint at the present course and speed, and the estimated time of arrival.



Course error is the course correction you must make to travel directly toward the TO waypoint.

9 WARNING INDICATOR

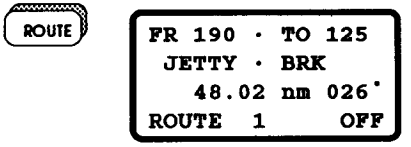
Any displays which flash may be inaccurate:
DO NOT USE THE DISPLAY FOR NAVIGATION UNTIL THE FLASHING STOPS

10 WAYPOINT SEQUENCING

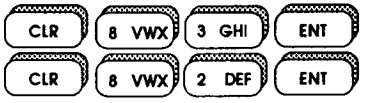
To follow a sequence of stored waypoints.

a) You can follow a sequence of waypoints in either increasing or decreasing order. In this example, we will start at waypoint 82 and go to waypoint 83, 84, etc.

Display "TO" and "FROM"



Set "TO" to 83 and "FROM" to 82.



b) When you arrive at waypoint 83, you can go from 83 to 84 (or the next higher numbered waypoint that isn't empty) by the following procedure:

Display any "NAV" Function

Press the "+" key

The "+" key increases "TO" to the next higher number for which the waypoint is not empty. FROM is set to the old TO. (A waypoint is empty if its latitude and longitude are zero) If you want to go in a decreasing sequence, press the "-" key instead of the "+" key.

If FROM is waypoint 0 (automatically named START), it remains waypoint 0, and present position is set into waypoint 0 every time "TO" is changed.

a) Display the sequence control and range

b) Set RNG to the desired sequencing range from the "TO" waypoint, in nautical miles. 0.03 nautical miles is a minimum practical value.

For example: Set RNG to 0.1 nautical miles.

c) Set SEQ to FWD (Forward) if you want waypoint numbers to increase, and BWD (Backward) if you want the waypoint numbers to decrease. This is done by pressing "CLR" one or more times to put the cursor in the field to the right of SEQ, and then pressing the "+" key one or more times to step to the desired selection.Then press "ENT" to enter your selection.

In this example, when you approach the "TO" waypoint to within 0.1 nautical mile, the "FROM" and "TO" numbers will both be decreased by one. If you approach to within two times the sequence range and pass the waypoint, the "FROM" and "TO" will be decreased by one. Whether or not the Automatic Sequence Control is on, "FROM" and "TO" will be increased or decreased to the next higher or lower nonempty waypoint, when you press the "+", or the "-" keys when you are displaying a "NAV" function.

d) To turn Automatic Waypoint Sequencing to OFF, make your selection the same way as FWD or BWD.

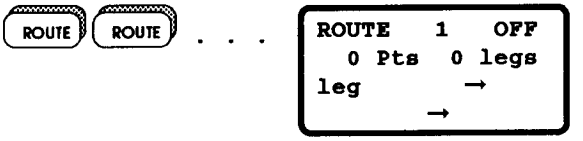
11 THE ROUTE FUNCTION

The ROUTE function can be used to travel from waypoint to waypoint, without having the waypoints stored in consecutive order. That is, on can specify a route using any of the existing waypoints 1-199 stored in memory.

For example, suppose you want to go from waypoints 6 to 14 to 48 to 3.

There is memory for 9 Routes with up to 20 points per Route in the navigator. First, you must specify the Route Points:

a) Display the Route information. Press the "ROUTE" key several times, until the Route display appears.

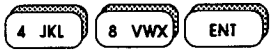


b) First, we will select Route 2 in which to store the desired waypoint sequence.

Next, we will enter the desired waypoint sequence.

Start with Waypoint 6

Then go to 14

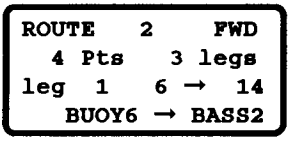


Then to 48

The Route ends at 3

To use Route 2, we select the Route display, select Route 2, and turn Route 2 from OFF to FWD or BWD. This is done by pressing CLR several times until the cursor is on the ON/ FWD/BWD field, stepping to the desired choice with the "+" key, and then pressing ENT.

The display now reads:



You are now ready to start on Route 2, with "FROM" set to 6 and "TO" set to 14. Pressing the "+" key while displaying any "NAV" function or the first "ROUTE" display will advance "FROM" and "TO" one step along the Route. For example, pressing "+" will set "FROM" = 14 and "TO" = 48.

If automatic sequencing is being used you will step one place along the Route when SEQ is FWD and the Range becomes less than RNG.

When you arrive at the "TO" waypoint for the last point of the Route, the message "END OF ROUTE' will be displayed for 40 seconds or until any key is pressed. Route will also be turned OFF.

To follow a Route in the reverse direction, set the Route to BWD, and you will start from the last Route Point going to the next to the last. Pressing the "-" key will move you along the Route from the end to the beginning, as will setting SEQ to BWD for automatic sequencing. Thus, you can travel a Route in either direction and even reverse direction in the middle of a Route, by using the "+" and "-" keys.

To insert an additional point in a Route, first turn ROUTE off. Next, press the "+" or "-" keys until the two points are displayed, between which you want to insert another point. Put the cursor on the number on the lower right:

Insert the new number. (One to three digits).

To delete a Route point, press the "+" or "-" keys until the point to be deleted is displayed on the lower right side of the display.

CLR CLR CLR — Put the cursor on that number

ENT — The point is now deleted

To clear an entire Route, press the CLR key until the cursor is on the Route number, and then press the ENT key.

CLR CLR CLR — Put the cursor on that Route number

ENT

You will get a "Press ENT ENT to clear Route" display

ENT ENT

The Route is now cleared. NOTE: ENT ENT must be pressed while the message "Press ENT ENT to clear ROUTE" is being displayed. If ROUTE is on, no other field in this display can be entered.

ALERTS

There are five alerts, which provide an audible beeping sound and message flashed on the display to alert the operator to certain events. To set the alerts, display the first item in the SETUP list.

SETUP SETUP +NW

```
ARRIVAL ALERT
OFF, RANGE  0.05
CROSSTRACK ALERT
OFF, RANGE  0.10
```

12 WAYPOINT ARRIVAL ALERT

To turn the waypoint arrival alert ON, do the following:

CLR ENT

To change the arrival alert range, key in the desired range in nautical miles (or statute miles or kilometers, if they have

been selected for input and display of distances):

When the range to the "TO" waypoint becomes less than the alert range, or when the waypoint is passed within two times the alert range, the alert will sound. The alarm for that waypoint is cancelled by pushing the CLR key. The alert will sound for at least 12 seconds, even if cancelled. When the range becomes greater than two times the alert range, the alert is re-enabled for the next waypoint.

13 CROSSTRACK ERROR ALERT

The Cross Track Error Alert is given whenever the cross track error is greater in magnitude than the alert range. The cross track error Alert can be turned OFF only by selecting the above display, pressing the CLR key several times until the cursor in on the ON in the bottom display line, and then pressing ENT.

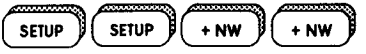
Otherwise, the cross track error alert is controlled the same as the waypoint arrival alert.

14 ANCHOR WATCH ALERT

To use the Anchor Watch Alert, do the following:

a) Drop anchor and wait for your boat to come to a steady position.

b) Select the Anchor Watch Alert display in the SETUP list.



c) Turn the Anchor Watch On.

d) Set the desired drift range in nautical miles, if it is different from that displayed:

When Anchor Watch is turned ON, your present position will be automatically saved, and the range from your present position to the Saved location will be continuously computed.

Whenever the range to the saved anchor point becomes greater than the drift range, the alert will sound. The alert is cancelled and the Anchor Watch is turned OFF if the CLR key is pressed while the alert is ON.

15 AUTOMATIC SHUTOFF ALERT

When operating on batteries, the SuperSport will automatically shut itself off, if left unattended for a period of time. This is to save the batteries, if the unit is accidentally left on. An alert will be given, if the elapsed time since the last key was pressed exceeds the SHUTOFF TIME. The display will read "Auto Shutoff Alert, Press CLR". If CLR is not pressed within two minutes after the display appears, the unit will be automatically shut off.

The SHUTOFF TIME is programmable from 5 - 99 minutes, and is found in the tenth display in the SETUP list. It is set to 20 minutes by the FIRST START procedure.

16 LOW BATTERY ALERT

When the batteries are nearly exhausted, you will get the alert message, "Battery Power is Low, Press CLR".

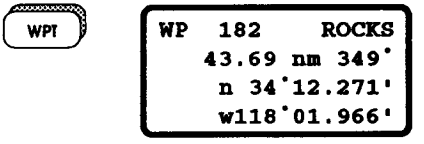
This tells you that you have about 20 minutes of battery life left with alkaline batteries, and about 10 minutes left with rechargeable batteries. Press the CLR key to resume normal operation.

There are 251 waypoints in the SuperSport, numbered 0 to 250. Waypoints 1-199 are for general use, and should be used for locations that you want to keep for a long time. If desired, you can "lock" waypoints 100-199 so they can not by seen or used by an unauthorized person. (See Sections 31 and 32). Waypoints 200-250 are used by the SAVE function, which enables you to save a location at any time by pressing the "SAVE" key. Waypoints 200-250 hold the last 51 saved locations, and the oldest one is lost each time a new location is saved. Waypoint 0 is a special waypoint into which present position is written each time the "TO" waypoint is changed. You should store waypoints you want to keep only in waypoint numbers 1-199.

17 WAYPOINT NAMES AND NUMBERS

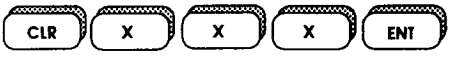
Waypoints can be selected for display or input by specifying the desired waypoint number. This can be done as follows:

a) Display the waypoint number, name, range and bearing from present position, and latitude and longitude.



To increase or decrease the number by one, press the "+" or "-" key.

You can also enter a 1, 2, or 3 digit number from 0 to 250.



Waypoints 1-199 can be given names. A name must be 1-5 characters in length. Examples of valid names are HOME, A, BREAK, P-37, and B461. All names are set to - - - - - by the first start procedure, except for waypoint 0, which is set to "START". If you do not want to use names, you can refer to the waypoints by number only.

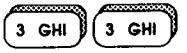
EXAMPLE: Give the name HOME to waypoint 5.

Display waypoint number and name:

Select waypoint 5:

Select the name input field:

Enter the first letter (H) by pressing the 3 GHI key twice. You select "G" with the first press, "H" with the second press, and "I" with the third press, and "3" with the fourth press.



Step to the next character by pressing the "+" key.

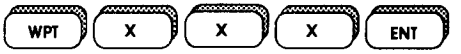
Key in the remaining 3 letters:

The name HOME is now in the waypoint name field. Enter it into the computer by pressing the ENT key.

The name HOME will be displayed for waypoint 5. If you try to enter a name into a WPT that has already been given another waypoint (5 for example), you will get a display of "NAME'S DUPLICATED TRY ANOTHER NAME."

18 ENTERING WAYPOINTS IN LAT/LON

First select the desired waypoint number (1-199



Enter the latitude and longitude, using only as many digits as you need.

Example: Latitude = 42° 18' N
Longitude = 077° 46.5' W

Latitude and longitude will be North latitude and West longitude, unless the "-" key is pressed. If the "-" key is pressed at any time during the data entry, the input will be South latitude or East longitude.

19 ENTERING PRESENT POSITION IN A WAYPOINT

a) Select the "TO PUT POS IN WP XX, PRESS ENT" display.


```
TO PUT POS IN WP
 12, PRESS ENT
SET WP  2    0.00
000° FROM WP   1
```

The waypoint number displayed (12 in the example) will be the first (lowest numbered) empty waypoint.

b) To save present position in the first empty waypoint, press the "ENT" key.

c) To save present position in a selected waypoint, which can be from 1 to 199 (With key unlocked), enter the waypoint number. For example, to put it in waypoint 125, press the following keys:

CLR 1 ABC 2 DEF 5 MNO ENT

This overwrites the position that was previously stored in the selected waypoint.

20 MAKING A WAYPOINT A SPECIFIED RANGE AND BEARING FROM ANOTHER WAYPOINT

a) Call up the Waypoint Range and Bearing Input Display.

WPT WPT

```
TO PUT POS IN WP
 12, PRESS ENT
SET WP  2    0.00
000° FROM WP   1
```

b) First, enter the waypoint number (1-199) that you want to use for the new waypoint.

CLR CLR X X X ENT

c) Next, enter the specified range in nautical miles.

CLR X X X X X ENT

d) Next, enter the specified bearing in degrees magnetic.

CLR X X X ENT

e) Last, enter the reference waypoint number (0-250).

CLR X X X ENT

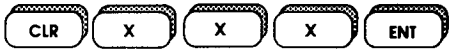
A new waypoint will now be computed at the specified range and bearing from the reference waypoint, and stored in the new waypoint. If 0 is selected as the reference waypoint, the reference point will be present position.

21 STEERING DIRECTLY TO A WAYPOINT

You can steer directly to a waypoint by the following procedure:

a) Select the waypoint Lat/Lon display

b) Select the waypoint number you want



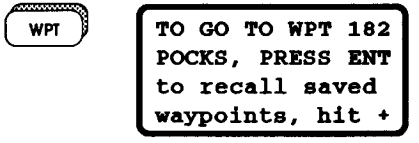
or 

. . .

or 

. . .

c) Select the next waypoint display



d) To go directly to the displayed waypoint, press "ENT".

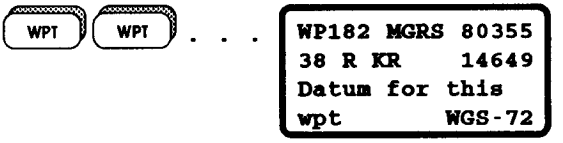
You will now have a zero cross track error, and the steering displays will guide you along a great circle to the waypoint

22 ENTERING WAYPOINTS IN MGRS COORDINATES

Waypoints can be entered in the GPS in MGRS (Military Grid Reference System) coordinates, only if the SETUP item MGRS/UTM is ON. If it is OFF, the waypoint display of MGRS coordinates will not appear.

If the SETUP item MGRS/UTM is ON, you can enter a waypoint in MGRS coordinates with the following steps;

1. Press the WPT key one or more times until the MGRS display appears.



2. Select the desired datum for coordinate conversion.

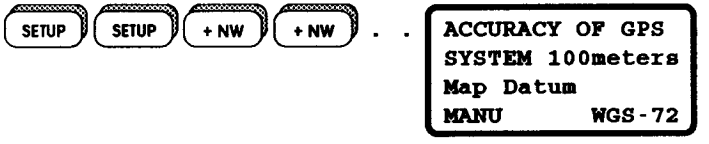
For marine navigation, leave the datum at WGS-84, as it was set by the First Start procedure. You will be correct or very close to correct for essentially all marine charts. Older charts in WGS-72 and NAD-27 are very close to the WGS-84 coordinates.

All MGRS and UTM charts are prepared using a specific map datum, or mathematical description of the shape of the earth. The datums are different for different regions and continents. The SuperSport GPS can be set to automatically select the standard map datum, or you can manually select the datum. If you are using a chart with a nonstandard datum (which is quite common), you will have to manually select the conversion datum for maximum accuracy.

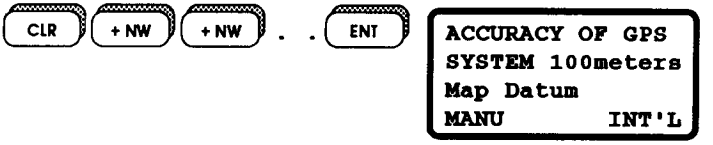
The datum shown in the above display is the one previously used to create the waypoint. This display is a reminder to use the same datum for navigation using this waypoint, for maximum accuracy.

The datum used for waypoint creation and navigation is in the SETUP list. It can be set so that it will be selected automatically, based on position, to the standard datum for that area. Some older charts may use a nonstandard datum, in which case you will have to manually select the datum from the SETUP list, for best correspondence with the chart. If you don't use the same datum as the chart, errors on the order of 100 meters may result.

If you want to manually select the datum, find the "Map Datum" display in the SETUP list.



The datum can now be selected by pressing CLR, and the + key a number of times until the desired selection is on the display. When you get the desired datum, press the ENT key.



The 11 standard map datums available for automatic or manual selection are:

WGS-72	WGS 1972
INT'L	INTERNATIONAL
GRS-67	AUSTRAILIAN NAT'L
CLARK-66	CLARKE 1866
CLARKE-80	CLARKE 1880
EVEREST	EVEREST
Mod EVER	MODIFIED EVEREST
AIRY	AIRY
Mod AIRY	MODIFIED AIRY
BESSEL	BESSEL
WGS-84	WGS 1984

In addition to the standard datums, there are a large number of nonstandard datums that can only be selected manually. These are arranged with 12 of the most common in alphabetical order following the standard datums, followed by 111 less common datums, also in alphabetical order. Last of all is a datum called USER DEF. A list of all the datums, and a description of the user defined datum, are in Section 11 of the Operator's Manual

When selecting the datum manually, if you hold the "+" or "-" keys down, the GPS will step through the list at a rate of four per second. A manually selected datum will stay in memory until it is changed, or the selection is set to automatic. In the AUTO mode, the datum is reselected every time you change waypoints, or enter new coordinates into the waypoint.

If the selection is in the manual mode and you want to change it to automatic, press CLR one or more times until the cursor is in the AUTO/MANU field, and then press ENT.

3. Select the waypoint.

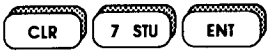
Select the waypoint you want to create using MGRS coordinates. For example, to select waypoint 36, do the following

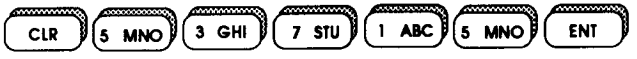

```
WP 36 MGRS 66022
31 N AA    00000
Datum for this
wpt        WGS-72
```

4. Enter the MGRS coordinates into the waypoint MGRS display.

For example, let's enter the following coordindates:

Grid Zone	11 S
100,000 meter square designator	LH
Easting	53715 meters
Northing	12491 meters






```
WP 36 MGRS 53715
11 S LH    12491
Datum for this
wpt.       WGS-72
```

The MGRS coordinates are entered and converted into lat/lon, UTM, and TD coordinates, which can be seen on the other WPT displays.

23 ENTERING WAYPOINTS IN UTM COORDINATES

To enter a waypoint in UTM coordinates:

1. Press the WPT key until the UTM display appears.

If it never appears, it means that the SETUP item MGRS/ UTM is OFF, and it will have to be turned ON to get the UTM display under the WPT key.


```
WP 36 UTM 353715
11 S      3712491
C.Meridian w117°
Datum      WGS-72
```

2. Select a datum.
3. Select a waypoint number
4. Enter the UTM coordinates into the UTM display.

You must enter the Grid Zone, Easting, and Northing. The Grid Zone is used to automatically compute the Central Meridian. (The Central Meridian cannot be input manually) Steps 1, 2, 3, and 4 are essentially the same as in Section 22.

After the waypoint is entered in UTM coordinates, the corresponding lat/lon, MGRS, and TD coordinates can be seen in the other WPT displays.

24 ENTERING WAYPOINTS IN TDS

To enter a waypoint in loran TD coordinates:

1. Press the WPT key several times until the TD display appears.

If if never appears, it means that the SETUP item LORAN TD is OFF, and it will have to be turned ON to get the TD display shown below.


```
WP 36 TDs   S1 26
GRI  9940   S2 39
TD1       28171.45
TD2       41218.19
```

2. Select the 4 digit GRI, and enter it into the above display.

To enter a waypoint in TDs, only GRI, TD1, and TD2 are required. The following page lists the GRI and Secondary Identification (S1 and S2) numbers for all the loran transmitters in operation in 1992.

LORAN TRANSMITTER LIST

4990
Central Pacific
10 Upolo Pt.
28 Kure

5930
East Canadian
10 Nantucket
24 Cape Race
37 Fox Harbor

5970
East Asian
10 Hokkaido
30 Hamp Yong
41 Gesashi

5990
West Canadian
10 Shoal Cove
26 George
40 Port Hardy

6780
South China
11 Unknown
24 Unknown

7170
S. Saudi Arabian
10 Salwa
25 Afif
38 Al Lith
51 Al Muwassum

7930
Labrador Sea
10 Cape Race
25 Angissoq

7950
Eastern Russia
10 Petropavlovsk
29 Ussuriysk
45 Kuril'sk
60 Okhotsk

7960
Alaska Gulf
10 Narrow Cape
25 Shoal Cove
43 Port Clarence

7970
Norwegian Sea
10 Boe
25 Sylt
45 Sandur
59 Jan Mayen

7980
Southeast US
10 Grangeville
22 Raymondville
42 Jupiter
58 Carolina Beach

7990
Mediterranean Sea
10 Lampedusa
28 Kargabarun
46 Estartit

8000
Western Russia
9 Petrazavodsk
24 Slonim
49 Simferopol'
64 Syzran

8290
North Central US
10 Baudette
26 Gillette
41 Williams Lake

8970
Great Lakes
10 Malone
27 Seneca
43 Baudette
58 Boise City

8990
N. Saudi Arabian
10 Salwa
24 Ar Ruqi
39 Ash Shaykh Humayd
55 Al Lith
68 Al Muwassum

9610
South Central US
10 Gillette
24 Searchlight
39 Las Cruces
51 Raymondville
64 Grangeville

9940
US West Coast
10 George
26 Middletown
39 Searchlight

9960
Northeast US
10 Caribou
24 Nantucket
38 Carolina Beach
53 Dana

9970
Northwest Pacific
10 Marcus
29 Hokkaido
54 Gesashi
80 Barrigida

9980
Icelandic
10 Angissoq
29 Ejde

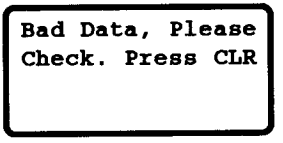
9990
North Pacific
10 Attu
28 Port Clarence
42 Narrow Cape

Enter the desired loran TD coordinates into the bottom two lines of the display.

After the second TD is entered, the navigator will automatically convert the TD pair to lat/lon, MGRS, and UTM, and store the waypoint lat/lon in memory.

NOTE

Not all TD pairs correspond to a Lat/Lon position! If you enter a TD pair that is not valid, or one that exists in a region of very poor loran geometry, the conversion will not take place, and you will get the following display:



If you get the above display, and you are trying to use a TD pair with poor geometry, you can sometimes get a successful conversion by entering a Lat/Lon into the waypoint that is close to the correct position, before entering the TD pair.

For a TD pair entered by keyboard to be successfully converted to Lat/lon (so that it can be used by the GPS navigator), the following conditions must be satisfied:

1 The TD pair must correspond to an actual Lat/Lon location, and the loran geometry at that place must be adequate for a good position fix.

2 The four digit GRI number must correspond to the TD pair entered.

If any of these conditions are not met, the waypoint Lat/Lon field will be left alone and you will get a display of "Bad Data, Please Check. Press CLR".

25 SAVING LOCATIONS

Your position and time can be saved at any time by pressing the "SAVE" key. One of the two displays shown next will go on for three seconds. The two displays are shown alternately, to remind you of the operating features of the GPS.


```
Location 205
saved at 16:15
Recall from 2nd
waypoint display
```

OR

```
Location 205
saved at 16:15
If MAN OVERBOARD
press SAVE again
```

The saved locations are sequentially stored in waypoints 200-250. When these 51 positions are full, they will be overwritten by newer saved locations. The memory holds the last 51 locations saved.

WARNING

DO NOT USE waypoints 200-250 as permanent waypoints, because they may be lost by being overwritten by the new saved locations.

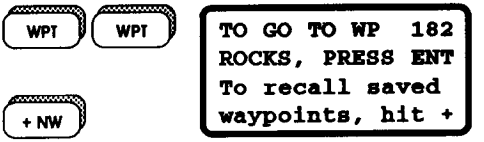
The time is saved in the waypoint name. For example, if it is 4:15 p.m., and the "SAVE" key is pressed, the saved waypoint will be given the name S1615. If another waypoint already has that name, the saved location name will be set to A1615, B1615, etc.

26 MAN OVERBOARD

IF A PERSON FALLS OVERBOARD, PRESS THE SAVE KEY TWICE IN QUICK SUCCESSION. When the Save key is pressed the second time within three seconds after the first press, the TO waypoint will be set to the saved point, and the steering displays will read the range and bearing back to the place where the person fell overboard. (You will always activate the "man overboard" feature when you press the SAVE key twice, regardless of which of the two alternating SAVE messages are displayed.)

27 RECALLING LOCATIONS

To recall your last saved location,



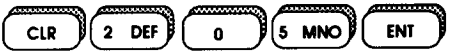
Pressing the "+" key again and again will recall the 2nd last saved, 3rd last saved, and up to the 51st last saved location.

28 NAVIGATING TO SAVED LOCATIONS

Navigating to saved locations can be done by entering the desired waypoint number into "TO" or "FROM", under the ROUTE key. In the last example, the last saved location was in waypoint number 205. To steer to this location, set "TO" to 205.

Display "TO"

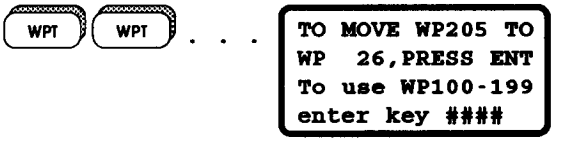
Set "TO" to 205



29 MOVING SAVED LOCATIONS INTO PERMANENT WAYPOINTS

If you desire to keep a saved location for a long time, it must be moved into one of the waypoints from 1-199. Otherwise, it will eventually be over-written as soon as 51 more locations are saved.

To do this, press the "WPT" key until the "MOVE" display appears



In this example, 26 is the first empty waypoint and 205 is the last saved location.

To move the last saved location into the first empty waypoint, simply press the ENT key.

To move the last saved location into waypoint XXX=1=199, do the following:

TO MOVE ANY WAYPOINT FROM YYY=1-250 TO XXX=1-199, DO THE FOLLOWING:

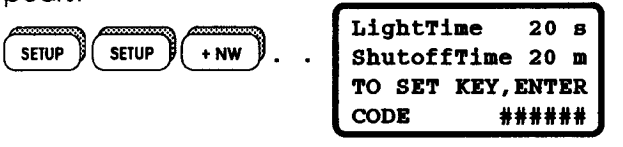
When a location or waypoint is moved from a place, that place is cleared (Lat/Lon are set to zero, and the name is set to _ _ _ _ _.)

ADDITIONAL PROCEDURES

30 ENTERING THE IDENTIFICATION MESSAGE

When the SuperSport is turned on, a special 32 character identification message is shown on the bottom two lines of the display for about four seconds. This message identifies your property and provides some protection against theft.

a) To enter or change your identification message, press the SETUP key twice, and then press the "+" key a number of times until the "TO SET KEY, ENTER CODE" display appears.



b) Enter the six digit code of your SuperSport. The code is provided in an envelope in your Operator's Manual, and should be kept in a safe place. Do not write it in your manual or give it to other people. If you lose the code , contact Micrologic with the serial number of your navigator, and after your ownership is verified, you will be given your code.


```
TO SET KEY,ENTER
NEW KEY      ####
To enter startup
message, hit ENT
```

c) Press the ENT key.


```
Enter your new
startup message
aaaaaaaaaaaaaaaa
aaaaaaaaaaaaaaaa
```

d) Now enter your identification message in the same way waypoint names are entered. (See Section 17). Blanks can be obtained by pressing the "+" key. If you make a mistake, press the CLR key to backspace one character. When the desired message is on the display, press ENT to enter the identification message into memory.

The following is an example of an identification message:

```
MICROLOGIC GPS
SuperSport SS01
SEA WOLF  JOHN
SMITH NEWPORT RI
```

31 WAYPOINT SECURITY - ENTERING THE KEY

The SuperSport has a 4 digit key which can be used to prevent display or use of waypoints 100-199 by unauthorized persons. The GPS is delivered with the key set to 0000. When the key is 0000 it has no effect, and waypoints 100-199 can be used by anyone.

If the key is set to other than 0000, it must be entered into the last WPT display each time power is turned on, before waypoints 100-199 can be displayed or used. Thus a person who does not know the key can not see or use waypoints 100-199. NOTE: If waypoints are unlocked or the key = 0000; then the bottom two lines of the last display of WPT will say "Waypoints 100-199 unlocked".

If the key is not 0000 when a new key is entered, waypoints 100-199 will be cleared unless the waypoints are unlocked first. Thus an unauthorized user cannot see the waypoints even if he knows the CODE and uses it to change the key. Be sure to unlock the waypoints before changing the key, or waypoints 100-199 will be cleared.

To set or change the key:

a) Perform steps a and b of section 30.

b) Enter the desired key:

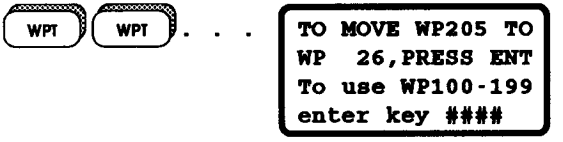
c) Write down the key and put it in a safe place. If you forget the key, there is no way to use or save waypoints 100-199, because they will be cleared if you enter a new key.

32 LOCKING AND UNLOCKING WAYPOINTS 100 - 199

Waypoints 100-199 are always unlocked when the key is 0000. If the key has been set to another number, the waypoints must be unlocked each time power is turned on, before they can be used.

To unlock the waypoints:

a) Choose the last WPT display.



b) Enter the key.


```
TO MOVE WP205 TO
WP  26,PRESS ENT
   WP100-199
    unlocked
```

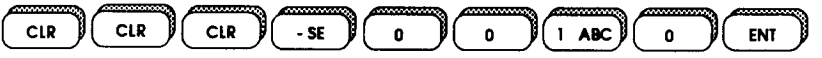
You can now display and use waypoints 100-199.

To lock the waypoints, turn power off. When the receiver is turned on again, the waypoints will be locked.

33 YACHT RACING TIMER (Countdown Timer)

To start the timer, enter the time-to-go with a minus sign into TIME. For example, 10 minutes before the start of the race, make the following entry that shows 10 minutes to start.


```
PACIFIC STD   +8
TIME     15:47:02
WED  DEC 18,1991
UTC/GMT 23:47:02
```



The time will then count down. At 5 minutes to go, the internal speaker will give 5 half second tones; at 4 minutes to go, you'll hear 4 half second tones; at 3 minutes to go, you'll hear 3 half second tones, etc. When the timer gets to zero, a 5 second tone will sound, and the time will be reset to the time of day.

34 LAT/LON OFFSETS

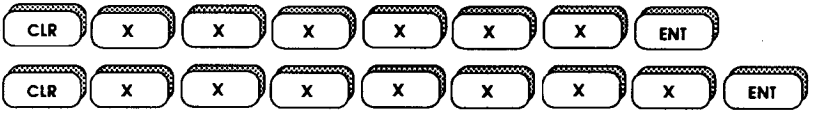
In general, the position computed by the SuperSport will be unbiased. There may be some regions, however, where there is a persistent offset in the displayed position coordinates, with respect to chart coordinates. This will

usually be due to charting errors. If desired, the operator can add additional offsets to latitude and longitude, to remove the offset between displayed and chart coordinates. This can be done as follows:

a) Display the Lat/Lon Offsets


```
DLA n 00°00.000
DLO w000°00.000
Max graphic CTE
is +/-  0.32 nm
```

b) Enter the chart Lat/Lon of a known reference point, when the receiver is located at the reference point.



As soon as the longitude is entered, the Lat/lon offset will be computed and put on the display.

c) To delete the offset, display DLA/DLO and enter zeroes.

An alternate method it to enter the offsets directly. they may be added or subtracted. The input sequence is similar to step b, above, except that the offsets (Which must be less than 30 minutes in magnitude) are keyed in instead of the Lat/Lon of the reference point.

35 CHANGING THE DISTANCE AND SPEED FORMAT

Press the SETUP key twice, then press the "+" key several times until the "DIST/SPD" selector is displayed.


```
LL FORMAT MM.MMM
DIST/SPD nm/kts
ALT/ACC      feet
```

To change the Distance/Speed format, press the CLR key twice, so that the cursor is on the "nm/kts" field. Now press

the + key one or more times until the desired format appears. Pressing the ENT key will now select the format that was displayed. The choices are nm/kts, sm/mph, and km/kph.

All displays and keyboard inputs of distances and speeds will be in the selected units. The selection will remain until it is changed. The selection of units does not affect how the data are stored in memory, so the data will be correct even if they were stored when the GPS was set to a different choice of units.

36 CHANGING THE ALTITUDE AND ACCURACY FORMAT

The altitude and accuracy format is changed in the same way as the distance and speed format. When showing the preceding display, press CLR several times until the cursor is in the "ALT/ACC" field, press the + key until the desired format is showing, and then press the ENT key. The choices available are feet and meters. The displays of altitude and lat/lon accuracy will then be in the chosen units.

37 COORDINATE CONVERSION - LAT/LON, MGRS, UTM, AND LORAN TD

To convert a location from one set of coordinates to another, simply enter the location in an unused waypoint in one of the four coordinate systems accepted by the SuperSport. As soon as the entry is complete, the location will immediately be converted into the other three coordinate systems, for display under WPT. For entry or display of MGRS and UTM coordinates, the SETUP item MGRS/UTM must be ON, and for entry or display of TD coordinates, the SETUP item LORAN TD must be ON. These are both set to OFF by the first start procedure, to keep the WPT displays simple for users not interested in these coordinate systems.

Instructions for waypoint entry in each of the four available coordinate systems are given in Sections 18, 22, 23, and 24.

38 SYSTEM TEST AND PERFORMANCE

After power is turned on, about one to three minutes are normally required to acquire and track the satellites. The second POS display shows how well the receiver is operating.


```
Sats Received  4
Sats Available 5
SignalQuality 99
Datum       WGS-84
```

The above display shows how many satellites are being received, and how many can be received. For example, the display shows that 4 out of 5 available satellites are being received. The satellites rise and set like the sun, moving across the sky twice each day. The number of satellites available is not constant, but changes with time. If fewer than 3 satellites are received, the navigator will not have enough signals to get a position fix, and the expected L/L error will be 9999 feet. If the receiver does not consistently pick up all the available satellites after five minutes of searching, the antenna may be in a poor location, where it does not have a clear line of sight to the satellites. The Signal Quality should read 80 or higher when the receiver (or external antenna) is still, and 40-60 when on a pitching, rolling boat, or a moving ground vehicle. If it reads less than 20 - 30, navigation will not be reliable.

The first POS display shows the expected Lat/Lon position error. It should normally read 100 - 300 feet, but may be much larger if the angles to the satellites are such that an accurate position fix cannot be obtained. If no fix can be computed, the L/L error will be 9999.

A number of other test displays are available, under the TEST list, which can be seen on the third press of the SETUP key. These are not needed for operation of the SuperSport, and are used by test technicians, and people curious about how things work. They are described in the Operator's Manual.

To turn on and select the serial data output, select the SETUP list, and press the "+" key several times until the following display comes up.


```
DATA 1 NMEA 0180
DATA 2 NMEA 0183

BEEPER IS      ON
```

Press the "CLR" key one or more times, until the cursor is in the DATA 1 or Data 2 field. Next, press the "+" key one or more times, until the desired serial data format appears on the display. Then press "ENT" to select that format. The choices for both DATA 1 and DATA 2 are:

OFF	MCHART	NMEA RMa
NMEA 0183	7 X 40	NMEA 0180
NMEA RMc	24 X 80	NAVLINK
WP UPLOAD		

IMPORTANT NOTE - The Supersport MUST be connected to external power to use the serial data input and output. The serial data circuits are automatically disconnected when operating on battery power.

The serial data outputs normally contain a label showing that they are from a GPS receiver. There are some older autopilots and instruments that will not work unless they see a LORAN label. The NMEA RMa and NAVLINK formats both label the data as coming from a loran, so these can be used to connect with older instruments.

40 SUMMARY OF SETUP FUNCTIONS

NAME	RANGE OF VALUES	DESCRIPTION	VALUES AT FIRST START
Arrival Alert	ON-OFF	Waypoint Arrival Alert Control	OFF
Range	0.00-9.99 nm	Waypoint Arrival Alert Range	0.05 nm
Crosstrack Alert	ON-OFF	Crosstrack Error Alert Control	OFF
Range	0.00-9.99 nm	Crosstrack Error Alert Range	0.10 nm
Anchor Watch Alert	ON-OFF	Anchor Watch Alert Control	OFF
Range	0.00-9.99 nm	Anchor Watch Alert Range	0.10 nm
auto magvar	ON-OFF	Automatic Magnetic Variation Control	ON
mag var	e180°-w180°	Manually Input Magnetic Variation	-
LL Format	MM.MMM or MM SS.S	Lat/Lon Format Control	MM.MMM
DIST/SPD	nm/kts, sm/mph km/kph	Distance and Speed Format Control	nm/kts
ALT/ACC	feet, meters	Altitude and Accuracy Format Control	feet
DLA DLO	+/- 30.000 min +/- 30.000 min	Latitude Offset Longitude Offset	n 00°00.000' w000°00.000'
Max. Graphic CTE	0.00-9.99 nm	Graphic Crosstrack Error Scaling	0.32 nm
DATA1	OFF, NMEA 0183, NMEA RMc, MCHART, 7x40, 24x80, NMEA RMa, NAVLINK, NMEA 0180, 180 + CDX, WP UPLOAD	Channel 1 Serial Data Output Control	OFF
DATA2	Same as DATA1	Channel 2 Serial Data Input/Output Control	OFF

40 SUMMARY OF SETUP FUNCTIONS (CONTINUED)

Beeper	ON/OFF	Control to turn off audio tone when keys are pressed. Does not turn off Alerts.	ON
ALTITUDE	AUTO -MAN	Automatic/Manual alt. computation selector	MAN
VEHICLE	CAR,BOAT, PLANE	Vehicle selector - Used to control speed of altitude computation	BOAT
SPEED AND COURSE FILTER	1-255 seconds	Speed and course filtering time	2 sec.
SAT. SELECT	AUTO-MAN	Manual or automatic satellite selection	AUTO
SAT NUMBERS	0-32	satellite numbers, can be input only if SAT. SELECT is MAN	-
MGRS/UTM	ON/OFF	Position and waypoint displays of MGRS and UTM coordinates shown only if ON	OFF
LORAN TD	ON/OFF	Position and waypoint displays of loran TD coordinates shown only if ON	OFF
ACCURACY OF GPS SYSTEM	15-200 meters	Accuracy of the GPS system This should be set to 100 if SA on, 15 if SA off	100 meters
MAP DATUM	AUTO-MANU	Controls if map datum is selected automatically or manually	MANU
MAP DATUM	WGS-84,WGS-72 INT'L, GRS-67 CLARK-66, CLARKE-80 EVEREST, Mod EVER AIRY, Mod AIRY, BESSEL and 141 others	Map datum used to compute Lat/Lon from GPS signals, and to convert from one set of coordinates to another.	WGS-84
USER DEF. DATUM	Five numbers which can be input to provide a nonstandard datum, which can be accessed by selecting the Datum named USER DEF. See Operator's Manual for instructions.		

BATTERY TIMER	00:00 - 99:59 hr:min	Timer to keep track of how long battery has been used	00:00
LightTime	5-255 seconds	Timer to control automatic turnoff of lights	20 sec
ShutoffTime	5-99 minutes	Timer to control automatic shutoff of navigator	20 min
TO SET KEY ENTER CODE	-	Special code to enable setting Key and startup (identification) message	-

41 SUMMARY OF DISPLAYS

Power on Display

```
MICROLOGIC GPS
SUPERSPORT SS01
J SMITH KEY WEST
TEL 277-476-9135
```

Displays for 5 seconds after power is turned on Personal Identification (Antitheft) Message


```
LAT n 34°13.291'
LON w118°35.524'
L/L  +/-  156 ft
ALTITUDE  293 ft
```

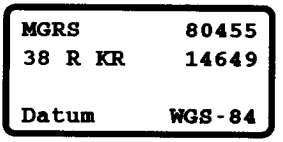
< Latitude, Longitude and
< Altitude of present position
Estimated position fix
< accuracy in feet. Max value of L/L ACC is 9999.

< = numeric input allowed
a = alphanumeric input allowed
+ = +,- key rolling allowed

```
Sats Received  4
Sats Available 5
SignalQuality 99
Datum      WGS-84
```

Number of satellites received
Number of satellites with elevation angle greater than 15°.
Avg. signal quality. (A number from 0-99) Map Datum

If the SETUP item MGRS/UTM is ON, then the following two displays appear for the third and fourth presses of the POS key. If it is OFF, then they will not appear.

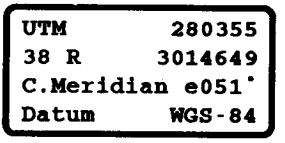


<

<aa<

MGRS easting,
grid zone, northing

Map datum

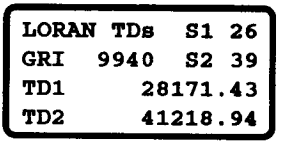


<

<a<

UTM easting, 100,000 meter square designator, northing,
Central meridian,
Map datum

If the SETUP item LORAN TD is ON, then the following display will appear for the next press of the POS key. If it is OFF, then the following display does not appear.

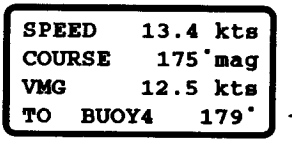


<

<<

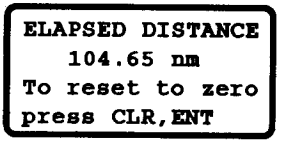
Secondary 1 selector
Loran GRI, Sec 2 selector
Time difference 1
Time difference 2

SPEED



+

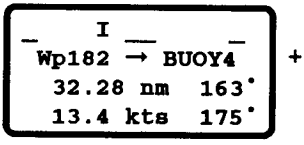
Present speed over the ground, Present course over the ground, Velocity made good in the direction toward the TO waypoint



<

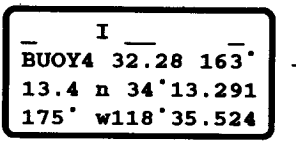
Distance travelled. (Same as odometer in an automobile)

NAV



+

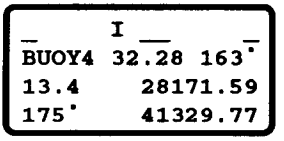
Graphic Steering Display. FROM-TO Waypoints, Range and Bearing to the TO waypoint, Speed and Course



+

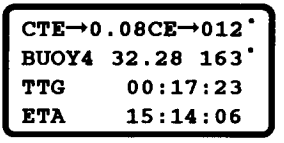
Graphic Steering Display. TO Waypoint, Range and Bearing. Speed and Course. Present position Lat and Lon

If the SETUP item LORAN TD is ON, then the following display will appear for the next press of the NAV key. If it is OFF, then the following display does not appear.



\+

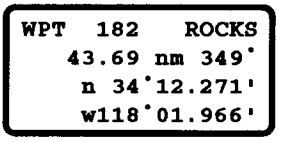
Graphic Steering Display. TO Waypoint, Range and Bearing. Speed and Course. Present position Loran time differences



\+

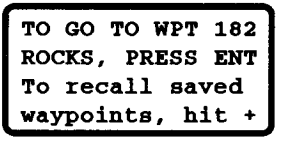
Crosstrack error, Course Error, TO waypoint, Range and Bearing to the TO waypoint, Time To Go, Estimated Time of Arrival

WPT



<a
<
<

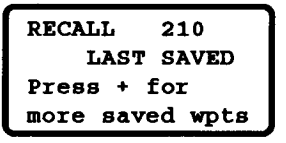
Waypoint Number & Name. Range and Bearing to WPT. Waypoint Lat/Lon



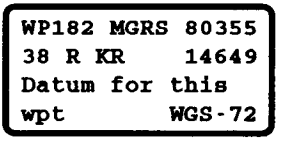
<

Press ENT key to steer directly to the waypoint. Press "+" key to see locations saved by previous presses of the "SAVE" key.

+NW



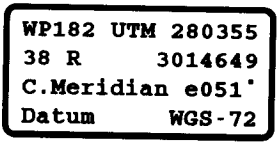
If the SETUP item MGRS/UTM is ON, then the following two displays appear for the third and fourth presses of the WPT key. If it is OFF, then they will not appear.



<<
<aa<

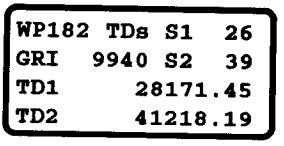
MGRS easting, grid zone, northing.

Map datum for this waypoint.

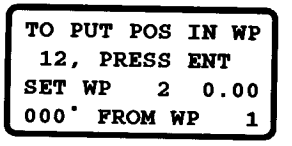


UTM easting, 100,000 meter square designator, northing, central meridian, map datum for this waypoint.

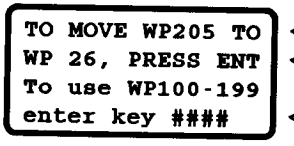
If the SETUP item LORAN TD is ON, then the following display will appear for the next press of the WPT key. If it is OFF, then the display will not appear.



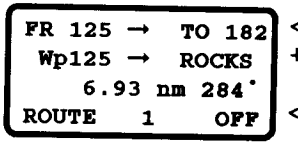
Secondary 1 selector
Loran GRI, Sec 2 selector
Time difference 1
Time difference 2



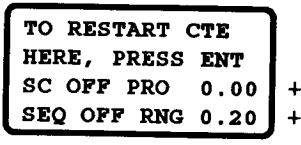
To put present position into a waypoint.
To make a waypoint a specified range and bearing from another waypoint



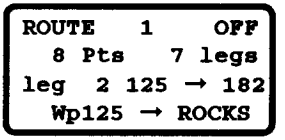
To move a waypoint from one number to another.
If the key has been set, it will have to be entered to see waypoints 100-199. (To hide wpts from unauthorized users)



FROM and TO waypoint numbers and names.
Range and Bearing to TO waypoint from FROM waypoint.
Shows if Route function is OFF, FWD, of BWD

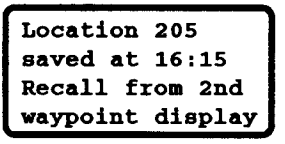


Press ENT key to zero cross track error.
Specified Course Angle, and Parallel Route Offset.
Automatic Sequence Control, and Trigger Range.

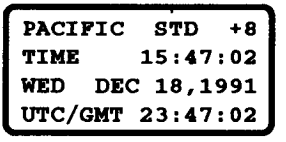


<+
<

Used to enter Route definitions, and review Routes. (A route is a sequence of wpt. numbers)

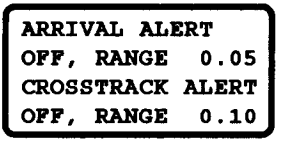


Shows for three seconds after SAVE is pressed. If SAVE is pressed again during the 3 seconds, the display shows how to steer back to saved location. (This is the MAN OVER-BOARD feature) Otherwise, the display goes back to what was shown before SAVE was pressed



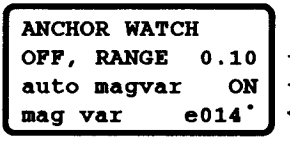
++
<
++<<

Time Zone,Standard-Daylight indicator. Local time. Day of week, month, day of month, and year. Universal Coordinated Time. (Same as GMT)



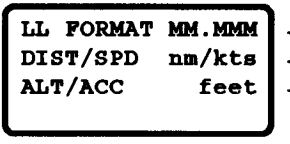
+<
+<

Arrival Alert ON/OFF control and trigger range. Crosstrack Error Alert ON/OFF control, and trigger range.



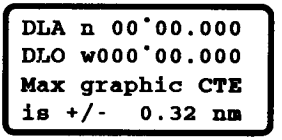
+<
+
<

Anchor Watch Alert ON/OFF control and trigger range. Automatic Magnetic Variation ON/OFF selector, Magnetic Variation



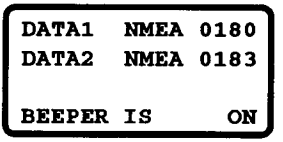
+
+
+

Lat/Lon format selector, Distance/Speed format selector, Altitude and Accuracy format selector



Lat/Lon offsets

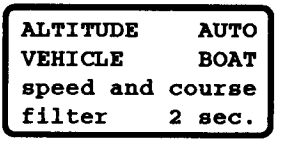
Graphic Steering display scaling selector



Serial Data 1 selector

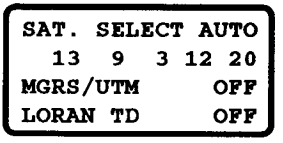
Serial Data 2 selector

Beeper ON/OFF control



Auto/Manual altitude control. Vehicle selector

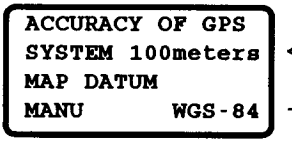
Filter for computed speed and course



AUTO/MANUAL satellite selection control.

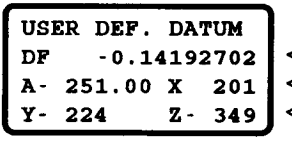
Satellite numbers.

Controls for MGRS/UTM and Loran TD coordinates under POS and WPT keys.



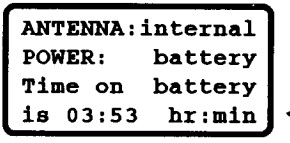
GPS system accuracy

Map datum auto/manual selector, datum selector.



User defined map datum

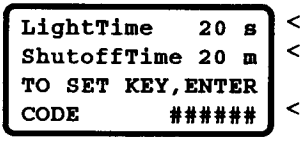
Five numbers can be input here to provide a nonstandard map datum



Antenna internal/external.

Power battery/external.

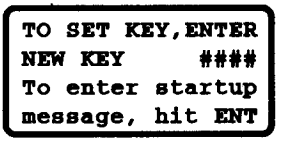
Timer is to show how long battery has been used.



Automatic shutoff times after last key is pressed, for lights and for entire unit.

Input point for setting waypoint security code, and for startup message

If CODE is entered correctly, go to the following display:

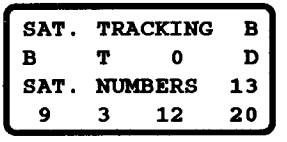


Place to enter new key.

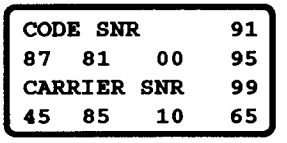
Control for entry of startup message

SETUP

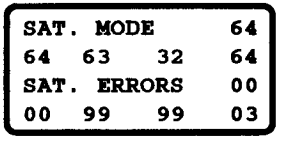
+ NW



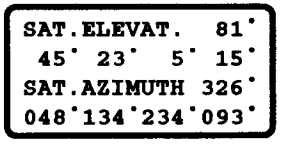
Satellite tracking modes
Numbers of satellites being tracked



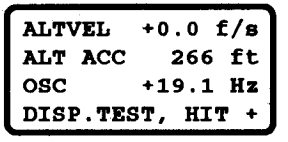
Code tracking Signal-To-Noise ratios
Carrier tracking Signal-To-Noise ratios



Satellite receiver modes, and number of errors in receiving ephemeris data



Satellites elevation and azimuth angles



Vertical velocity, and its estimated accuracy. Oscillator frequency offset, display test entry.

+ NW

all display pixels are turned on

9610 DESOTO AVENUE
CHATSWORTH, CA 91311

OGSSP8-92