

GNS 480 GPS/WAAS/NAV/COM



EULA

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GPS Basics

The altitude calculated by the GNS 480 is geometric height above mean sea level and could vary significantly from altitude displayed by pressure altimeters in aircraft. GPS accuracy may be degraded by the U.S. Department of Defense-imposed Selective Availability (SA) programs.

GPS receivers operate by receiving and decoding very low power radio signals broadcast by satellites. It is possible that in some situations other radio equipment or electronic equipment used in close proximity to a GPS receiver may create electromagnetic interference (EM/) which may affect the ability of the GPS receiver to receive and decode the satellite signals. In such event, the interference may be reduced or eliminated by switching off the source of interference or moving the GPS receiver away from it.

About This Manual

The **Getting Started** section describes and illustrates the General Operation of the unit in the form of step by step instructions. The **General Operation** Section goes into more descriptive detail on the basic features of the GPS, moving map, COM, NAV and Transponder radios.

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Getting Started

This guide describes the operation of the GNS 480 Color GPS/WMS Nav/Com. The GNS 480 provides a new, higher level of accuracy integrity, integration, flight planning capability, and convenience for the pilot.

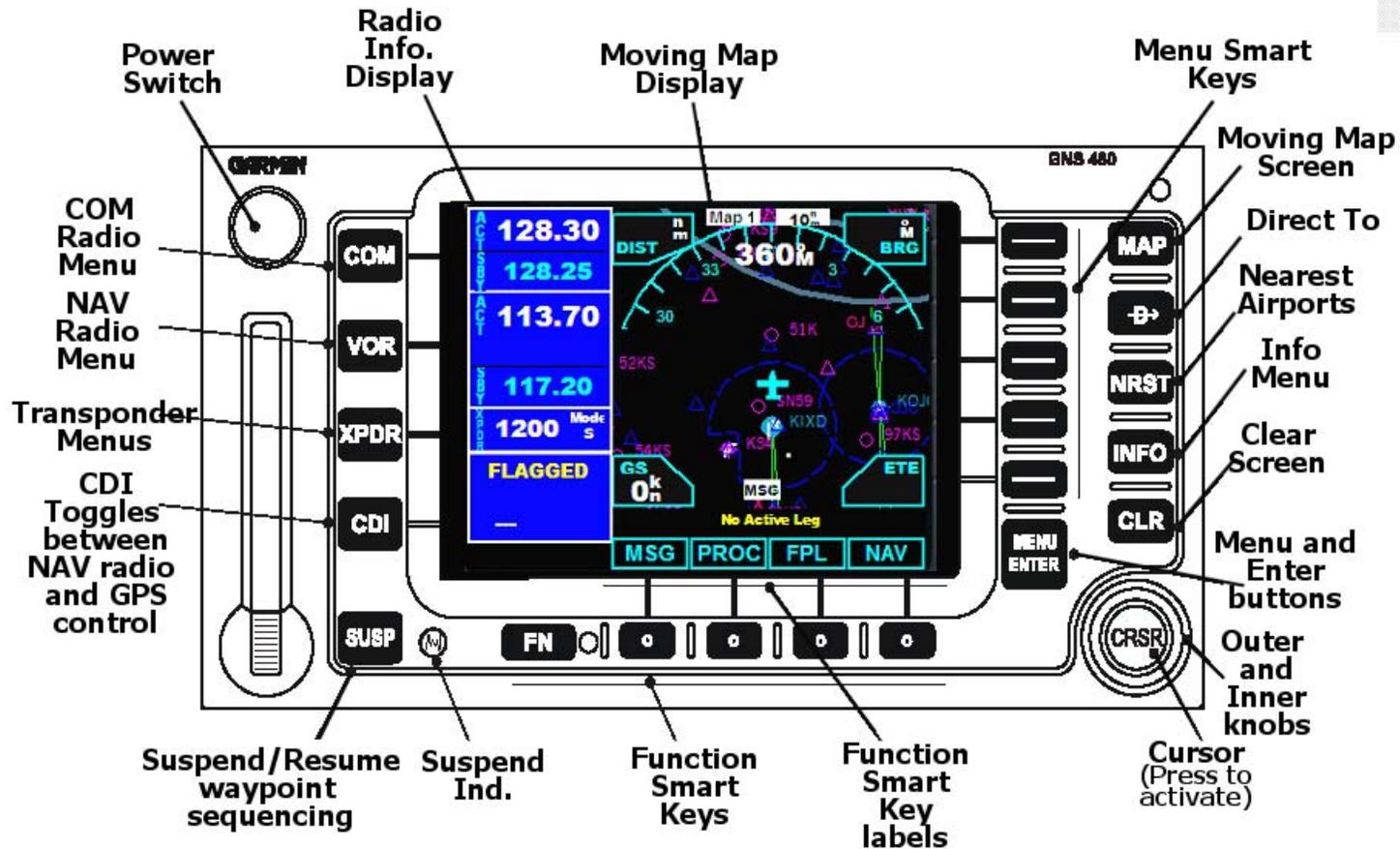
The GNS 480 combines a large number of easily accessible controls to use the high-resolution color multi-function display, NAV and COM transceivers, GPS/WMS navigator, and transponder controller all in a single unit.

The **Getting Started** section of this Pilot's Guide covers the details, so you can get the most out of your GNS 480 quickly. This section and the Quick Reference Guide, when used with the simulator for practice, will prepare you to get the most out your equipment.

Important Topics in Getting Started:

[Controls](#)[Basic Map Features](#)[Starting Up](#)

CONTROLS



Controls Diagram

Getting StartedPower

The knob at the top left corner of the GNS 480 controls power on/off.

FN and Function Smart Keys

Press the FN key to page through the available group of Functions that appear at the bottom of the display. The "Smart" function keys located below each label will activate that function.

COM

Select Com radio mode. Press COM. The function and Screen item smart keys access more features.

VOR

Select NAV radio mode. Press YOR. The function and Screen item smart keys access more features.

XPDR

Transponder radio. The function and Screen item smart keys access more option.

CDI

Toggles the main CDI output between GPS and internal VOR/LOC radio sources.

SUSP

Suspends or resumes flight plan waypoint sequencing. When waypoint sequencing is suspended, the SUSP annunciator light will illuminate.



Getting StartedMAP

Selects the moving Map mode. Press MAP twice to view Map page 1. Turn the Inner knob to view the 2nd map. The Inner Knob will access more Screens.

Direct-To

Selects the Direct-To page. Screen options allow setting up Direct-To a particular waypoint or facility.

NRST

Activates Nearest Search. You can search through the closest airports, NDBs, VORs, intersections, airspaces, waypoints, and radio frequency data. The outer and inner knobs access additional data pages.

INFO

Activates Info mode which provides time and aircraft position data..

CLR

Clears text when editing or deletes the highlighted item.



Getting Started

Smart Keys

Smart Keys are buttons which have multi purposes, depending on which screen or mode of operation the GNS 480 is in at any particular time. Labels indicating the present function of each key are presented on the display screen.

There are two types of Smart Keys:

1. Smart Keys (vertical)
2. Smart Function Keys (horizontal).



The Smart Function Keys have several different modes which can be accessed in MAP or NAV modes via the Function (FN) button.

There are three sets of Smart Function Keys for map and NAV view.

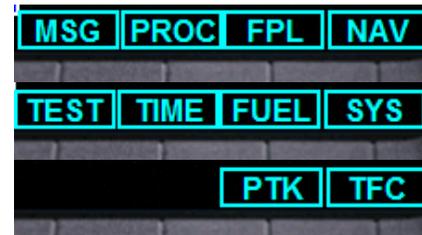
Special Smart Function Key labels may also appear on many of the various displays on the GNS 480. All of the Smart Function Keys and their respective purpose will be described throughout this manual.



Vertical Smart Keys

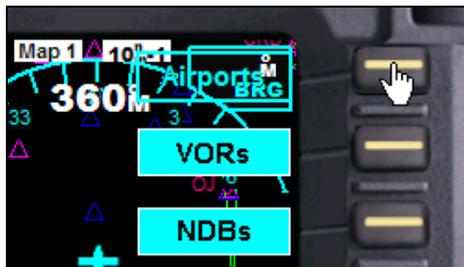


Smart Function Keys



Getting StartedScreen/Enter

When editing information or a response is required, pressing the Enter key accepts the value or confirms the response. In COM, VOR, XPDR, and MAP modes, pressing this key will bring up a list of Screen items on the right side of the display allowing the pilot to select. The Screen items are then selected by pressing the key to the right of it. Pressing the Screen or Enter key while the Screen items are shown will remove them from view.



While in Map view the Screen key will bring up the declutter Screen. A highlighted label means the specific map detail is visible. Use the Smart Keys adjacent to each label to remove/show this detail from the map.



Getting Started

Inner and Outer Knobs

You can move the cursor or highlight information by turning the Large knob. Turn the Small knob to change information.

CRSR

Press the CRSR knob in to activate the cursor (CRSR). The area on the display that you can now edit will be highlighted. Now you can change information with the CRSR knob and move the cursor to the next area to edit by sequentially pressing the knob.



For example, when activating the Timer Screen sequentially pushing in the CRSR knob will scroll down the page and the active element will be highlighted. The same is true of the other Screens as well.

Getting Started

BASIC MAP FEATURES

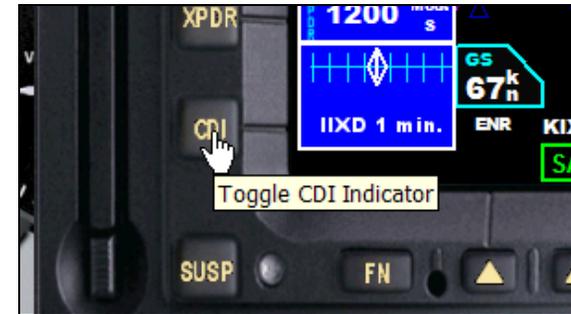


Getting Started

CDI Indicator

When the NAV radio is tuned to a localizer (LOC) or localizer backcourse (BC) the CDI button will toggle the CDI scale view for accurate approach. ETA to the signal is also provided.

When the localizer signal is of type backcourse (BC) the indicator sensing needle is reversed, providing accurate approach data to the BC signal.



Map Scale

While in MAP view mode push in the CRSR knob. The Zoom Screen will appear on the screen.



Use the smart Screen keys adjacent to the + and - symbols to change the map scale

Press CRSR again to close the Zoom Screen.



Getting Started

Viewing Modes and Screens
Follow the links for more detailed information.

Pan View



NAV View



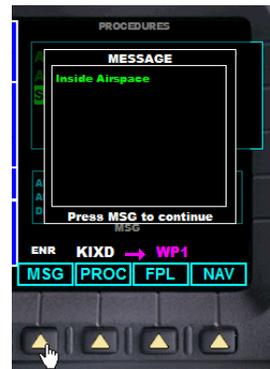
Flight Plan (FPL) Screen



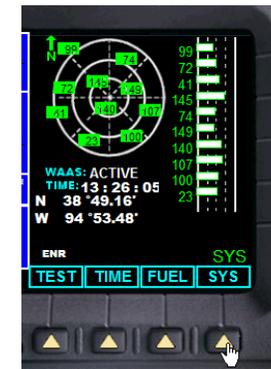
Procedures (PROC) Screen



Message (MSG) Screen

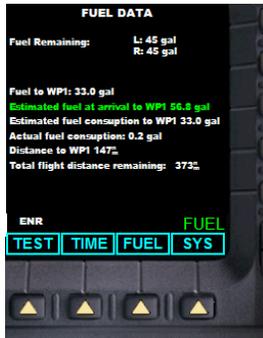


System (SYS) Screen

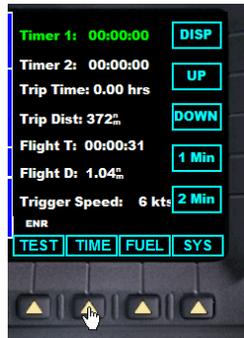


Getting Started

Fuel Data



Timer Screen



Test Screen



Traffic Screen



Parallel Track Data



Getting StartedUsing the Moving Map

The Map mode provides a moving map for a graphic display of your flight including the surrounding area, as well as navigation information to aid your situational awareness. You can customize the Map pages for Map scale and display detail, such as Airports, VORs, NDBs, and Intersections. When decluttering is selected, the detail feature which has been deselected is removed from the display. You can also declutter the display by sequentially pressing the **MAP** button when in Map mode.



Press **MAP** to reach Map mode.

COM, NAV, Transponder, CDI, Annunciator, and other radio information is shown on the left side of the display and the map display is shown on the right side. →



Use the outer and inner rings of the large knob control on the lower right side to move between different map views and menu pages within the moving map system.



Getting Started

ADJUSTING RADIO FREQUENCIES



Select the **COM**, **VOR** or **XPDR** buttons on the left hand side of the unit. The respective frequency will be highlighted in white. In the case of the NAV and COM radios this will be the standby (STBY) frequency.

Use the outer and inner knobs * to change the whole frequency and decimal frequency respectively for NAV and COM radios



Use the Smart Function Key labeled **↔** to swap the standby and active frequency.

*Mouse wheel enabled.
See [Radio Operation](#) for more details.

Getting Started

Transponder radio frequency is changed by pressing the **XPDR** button, and then the function **FN** button to bring up the transponder frequency select menu. Selection is by sequential number.

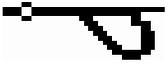
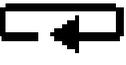
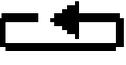
See [Radio Operation](#) for more details.



Getting Started

MAP SYMBOLS

The following symbols are used on the map display to depict active flight legs, airports and navigation beacons.

	Left Turn		Airport		Direct To
	Right Turn		Airport - Soft Surface Runway		Course To
	Left Turn		Marine Airport With Water Runway		Tacan
	Left Hand Turn		Helipad		VOR
	Right Turn		Private Field		Vortac
	Right Hand Turn		Localizer		VOR-DME

Getting Started**ANNUNCIATIONS**

The following annunciations appear on the appropriate displays to provide status or information. All annunciations are available on the moving map display. Annunciations may be output to external annunciators.

Annunciation	Description
GPS	Indicates GPS is being used as the navigation source. Appears in lower left corner of the display.
YOR/ILS/LOC	Indicates YOR/ILS/LOC is being used as the navigation source. Appears in lower left corner of the display.
ENR	Appears to the light of the "GPS" annunciator when in En Route mode. When > 30 nm from departure or destination and not on departure or arrival procedure. CDI resolution is ± 2 nm.
TERM	Appears to the light of the "GPS" annunciator when performing approach navigation within 30 nm of departure or arrival airport. CDI resolution is ± 1 nm.
APPR	Appears to the right of the "GPS" annunciator when GPS approach is active, and on Final Approach course (i.e. VTF or FAF, MAP or the first Missed Approach waypoint is active. CDI resolution is variable for all approaches and becomes more sensitive as you near the runway.
LOI	"LOI" (Loss of Integrity) appears on the left side of the map display when WMS/GPS is unable to calculate the integrity of the position or calculated integrity is insufficient to support the current phase of flight.
BC	The Back Course annunciation appears to the right of "LOC" when the Back Course Localizer mode is enabled.
DR	The Dead Reckoning annunciator appears on the left side of the map display when GPS position is unavailable and the GNS 480 is in Dead Reckoning mode. Dead Reckoning mode will continue until GPS position is restored or the first Pilot NAV leg is reached.
PTK	The Parallel Track annunciator appears in the lower left corner of the display when parallel track is active.
SUSP	Suspend annunciation appears in the lower left corner of the display when automatic sequencing of waypoints in the active flight plan is suspended.

Getting Started**POWER ON**

The GNS 480 performs internal checks and shows the status of the tests during start up. The startup screen, License Owner Name, testing, position, and database information shows on the screen for several seconds and then shows the first Map page.

Power Up

1. Push the **POWER** knob in to turn on power.
2. The GNS 480 performs internal checks and shows the status of the tests during start up. After these internal checks, the GNS 480 is ready to navigate.



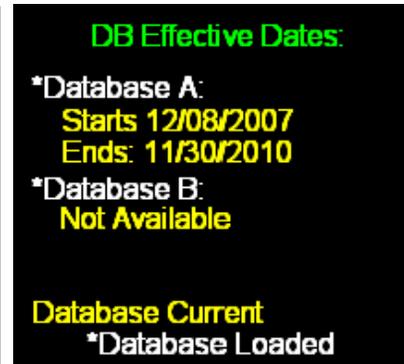
Getting Started

DATABASE CHECK

The GNS 480 verifies the integrity and expiration date of the database. The GNS 480 will load the appropriate current database cycle and also let you know if a database is not current (dates invalid).

The final boot screen is the information screen (INFO), which displays time, position heading and altitude data.

The screen is also available to you any time by pushing the **INFO** button.

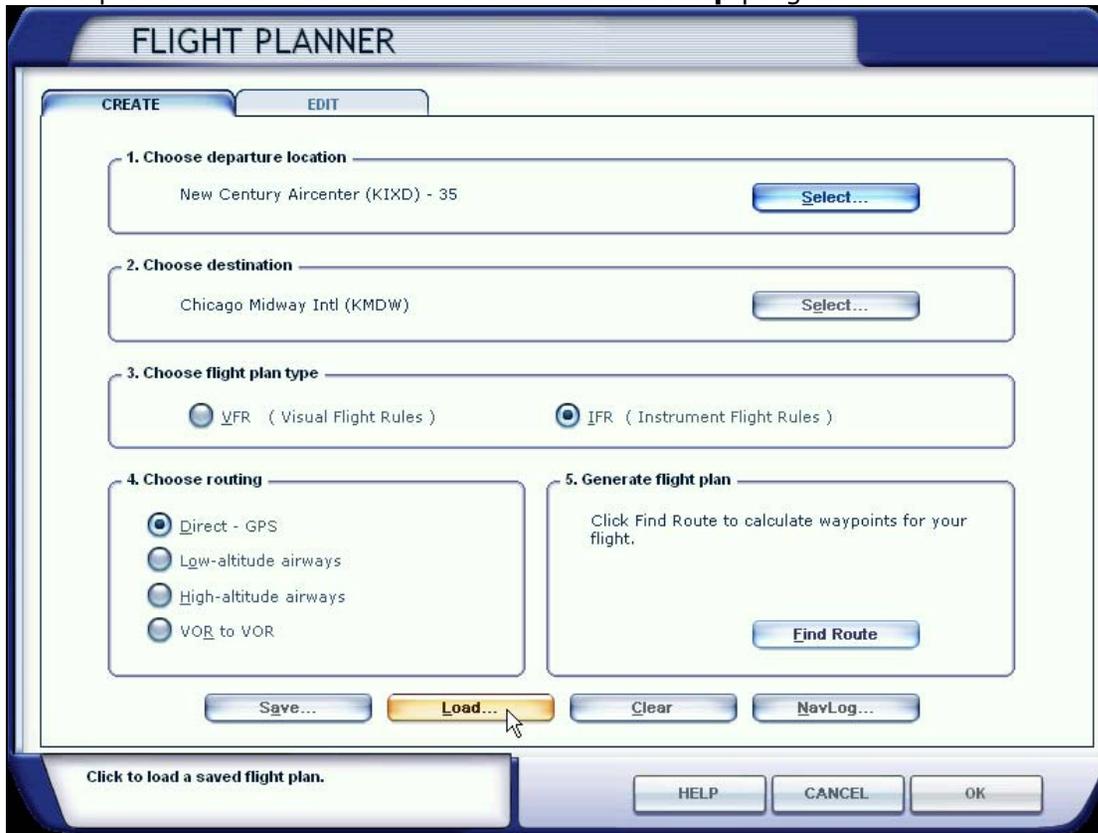
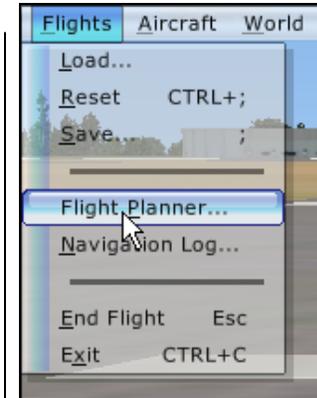


Getting Started

LOADING A FLIGHT PLAN

Flight plans may be loaded into the GNS 480 via the Flight Simulator X **Flights** menu. Just click **Flights** and then **Flight Planner**.

The Flight Planner menu will appear. Either create a new Flight or load and existing one. A review of this procedure can be found in the simulator's **Help** program.



Getting Started



You can access data on your flight plan, and also, add and delete waypoints by selecting the Smart Function Key labeled **FPL**.



Data on waypoints, heading and distance can be found here. You can also add and delete waypoints from this menu. See [Working With Flight Plans](#) under the General Instructions for step by step procedures.

Getting Started**DIRECT TO FLIGHT PLANS**

You can create a Direct To flight plan fast and easy by simply pressing the Direct To button and following the step by step procedure outlined in the **General Instructions**.

**FIND A NEAREST WAYPOINT**

The Nearest page group (NRST) provides detailed information for the nine nearest airports, VORs, NDBs, and intersections within 200 nm of your current position.

1. Press NRST. The default waypoint type is Airport.
2. Press the menu item key for the desired waypoint type. Press the More menu item key to display more types.
3. Turn the Inner knob to scroll through the list.



Getting Started

The GPS cannot display all nine of the nearest airports, VORs, NDBs, or intersections on the corresponding NRST page at once. The Nearest Airport page displays detailed information for the five nearest airports, with a scroll bar along the right hand side of the page indicating which part of the list is currently displayed. The NRST pages for VORs, NDBs, intersections, and user waypoints will display nine waypoints at a time. Use the flashing cursor and large knob to scroll and view the rest of the waypoints or airspaces in the list.

To scroll through the list of nearest airports, VORs, NDBs, or intersections

1. Select the desired NRST page, using the steps outlined above.
2. Press the CRSR button to activate the cursor.
3. Rotate the outer knob to scroll through the list. The scroll bar along the right-hand side of the page will indicate which part of the list is currently being displayed.
4. Press the CRSR button to remove the flashing cursor.



Getting Started**NAVIGATING TO A NEARBY WAYPOINT**

The NRST pages can be used in conjunction with the direct-to function to quickly set a course to a nearby facility. This feature can be a real time saver compared to retrieving information from the database using the WPT pages. More importantly, it instantly provides navigation to the nearest airport in case of an in-flight emergency.

To select a nearby airport, VOR, NDB, intersection or user waypoint as a direct-to destination

1. Use the flashing cursor to scroll through a NRST page list and highlight the desired nearest waypoint, as explained above.
2. Press the **Direct-to** button to display the Select Direct-to Waypoint page.
3. Press the **ENT** button to accept the selected waypoint's identifier and press the **ENT** button a second time (with Activate? highlighted) to begin navigating to the selected waypoint.



Getting Started**FINDING THE NEAREST AIRPORT**

The Nearest Airport page displays the identifier, symbol, and bearing of the nine nearest airports (within 200 nm of your current position), as well as the distance to each airport. For each airport listed, the Nearest Airport page also indicates the bearing to the airport, the distance, the best available approach, the common traffic advisory frequency (CTAF), and the length of the longest runway.

Additional communication frequencies, runway information, and other details are available from the Nearest Airport page by highlighting the identifier of the desired airport and pressing the ENT button.

To view additional information for a nearby airport

1. Select the Nearest Airport page.
2. Press the **CRSR** button to activate the cursor.
3. Rotate the large knob to scroll through the list, highlighting the identifier of the desired airport.
4. Press the **ENT** button to display the Airport Location page for the selected airport.
5. To view additional WPT pages for the selected airport (including the Airport Runway and Airport Frequency pages) press the **CRSR** button to remove the flashing cursor.
6. Rotate the small knob to display the additional WPT pages.
7. When finished, press the **CRSR** button to return the flashing cursor to the screen.
8. To return to the Nearest Airport page, press the **NRST** button.



Getting Started**FINDING THE NEAREST INTERSECTION**

The Nearest Intersection page displays the identifier, symbol, and bearing of the nine nearest intersections (within 200 nm of your current position), as well as the distance to each intersection.

To view additional information for a nearby intersection

1. Select the Nearest Intersection page.
2. Press the **CRSR** button to activate the cursor.
3. Rotate the large knob to scroll through the list, highlighting the identifier of the desired intersection.
4. Press the **ENT** button to display the intersection page for the selected intersection.
5. To return to the Nearest Intersection page, press the **NRST** button.



Getting Started**FINDING THE NEAREST NDB**

The Nearest NDB page displays the identifier, symbol, and frequency of the nine nearest NDBs (within 200 nm of your current position), as well as the bearing and distance to each NDB.

To view additional information for a nearby NDB

1. Select the Nearest NDB page.
2. Press the CRSR button to activate the cursor.
3. Rotate the large knob to scroll through the list, highlighting the identifier of the desired NDB.
4. Press the ENT button to display the intersection page for the selected NDB.
5. To return to the Nearest NDB page, press the NRST button.



Getting Started**FINDING THE NEAREST VOR**

The Nearest VOR page displays the identifier and symbol of the nine nearest VORs (within 200 nm of your current position), as well as the bearing and distance to each VOR. For each VOR listed, the Nearest VOR page also indicates the frequency of the nearby VOR for reference in tuning a VOR receiver.

To view additional information for a nearby VOR

1. Select the Nearest VOR page.
2. Press the CRSR button to activate the cursor.
3. Rotate the large knob to scroll through the list, highlighting the identifier of the desired VOR.
4. Press the ENT button to display the intersection page for the selected VOR.
5. To return to the Nearest VOR page, press the NRST button.



Getting Started**NEAREST AIRSPACE PAGE**

The last page in the NRST group, the Nearest Airspace page, will alert you to as many as nine controlled or special-use airspaces near or in your flight path. Alerts are provided according to the following conditions:

1. If your projected course will take you inside a controlled or special-use airspace within the next ten minutes, the Airspace ahead—less than 10 minutes alert will appear. The Nearest Airspace page will show the airspace as Ahead.
2. If you are within two nautical miles of a controlled or special-use airspace and your current course will take you inside that airspace, the message Airspace near and ahead will appear. The Nearest Airspace page will show the airspace as Ahead < 2nm.
3. If you are within two nautical miles of a controlled or special-use airspace and your current course will not take you inside, the message Near airspace less than 2nm will appear. The Nearest Airspace page will show Within 2nm of airspace.
4. If you have entered a controlled or special-use airspace, the message Inside Airspace will appear. The Nearest Airspace page will show Inside of airspace.



General Operation

This section of the manual will go into more specific detail and step by step procedures for operating the GNS 480. These expanded operating instructions will take you through all aspects of the GNS 480 GPS, moving map and other functions and advanced features.

This section contains instructions on:

Moving Map	Working with Flight Plans	Procedures (PROC) Screen	Radio Operation
Fuel Data Mode	Timer Mode	Air Traffic Mode	Parallel Track (PTK) Data
System (SYS) Mode	Test Mode	Info Mode	Message (MSG) Screen

General Operation

MOVING MAP (MAP)

The Map mode provides a moving map for a graphic display of your flight including the surrounding area as well as navigation information. Maps are generally drawn with Ground Track magnetic North at the top of the display (Up). You can customize the Map display for the Map scale and the information displayed, such as Airports, VORs, NDBs, Intersections, and timer data (see [Timer Screen](#) below).



Press MAP to reach Map mode. You can access MAP mode directly from any other screen on the GNS 480 by pressing this button.

COM, NAV, and Transponder radio data, and CDI are shown on the left side of the display and the map display is shown on the right side.



Moving Map – Map 1

General Operation

There are two Map pages that you select by turning the inner knob clockwise or counter clockwise.



Map 1 – Moving Map



Map 2 – Pan View

Pan view is always oriented north, and the aircraft symbol rotates to indicate your relative position on the north oriented display.

General OperationMap Page Groups and Pages

The information that appears on the GPS screen is presented on pages, and you can only view one page at a time. Some pages are organized into groups of related pages, called page groups.

There are three page groups in MAP mode for the GNS 480:

The Navigation page group includes:

1. Default Moving Map
2. Pan View

The Waypoint page group includes:

1. Airport Location
2. Airport Runway
3. Airport Frequency
4. Airport Approach
5. Intersection
6. NDBs
7. VOR

The Nearest page group includes:

1. Nearest Airport
2. Nearest Intersection
3. Nearest NDB
4. Nearest VOR
5. Nearest Airspace

You can move between these groups by using the outer and inner knob while in MAP view. Use the outer knob first and it will select between the Waypoint and Nearest page groups. The inner knob will go through the individual pages.



While in the Navigation page group, rotating the inner ring first will toggle between the default moving map and Pan View.

You can always access the Nearest page group at any time by pressing the **NRST** button.



General Operation

CHANGING MAP SCALE



While in MAP mode press the cursor knob in once. This will bring up the zoom menu.

Use the Smart Key buttons labeled + and - to change the map scale factor.

The map scale is displayed on the top of the MAP display. The Map offers 20 scale settings, ranging from 500 feet to 500 nm. The GPS receiver indicates the scale on the left side of the map display; this represents the top-to-bottom distance covered by the map display.



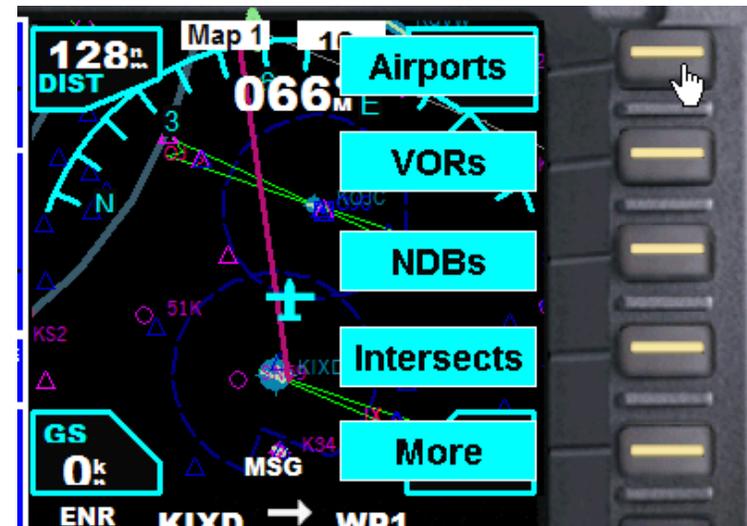
General Operation**MOVING MAP MENU ITEMS**

Press the MENU button in MAP mode to access the menu items



Screen elements can be toggled on and off as desired:

1. Airports
2. VORs
3. NDBs
4. Intersections
5. More – access to menu dialog that is used to activate a specific leg in an active flight plan



General Operation

You can also access data on the nearest facility, region VOR, etc. by rotating the outer knob clockwise and counter clockwise.

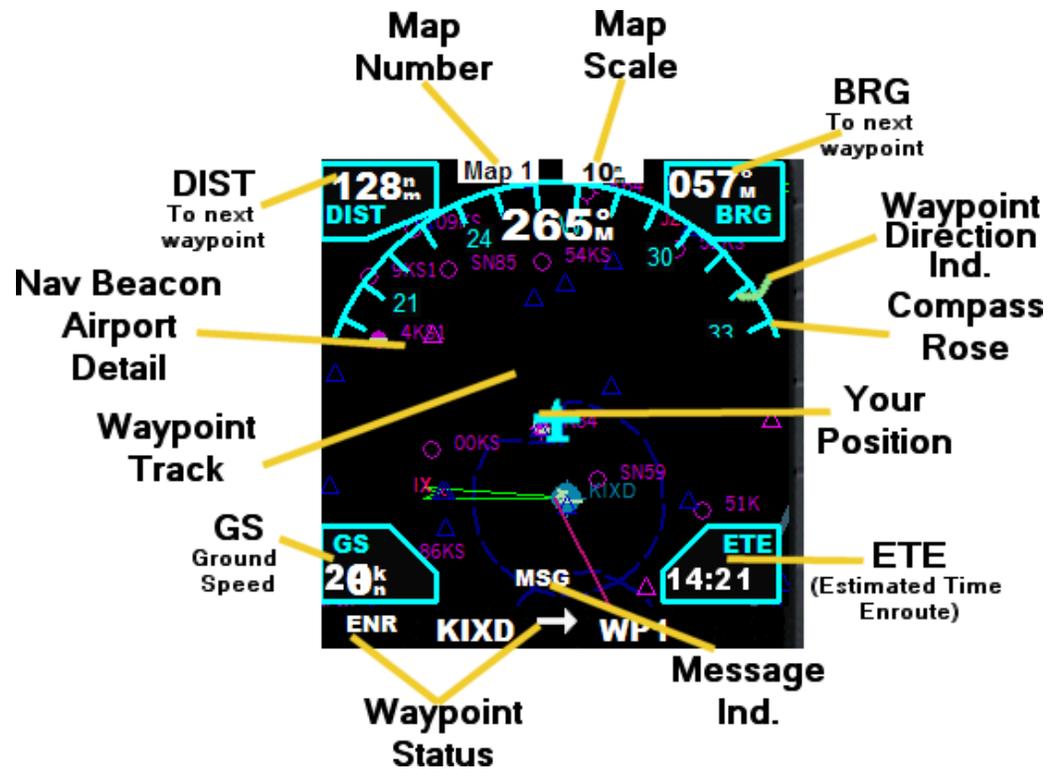
The inner knob can be used to access sub-pages within that group.



General Operation

Display Screens

MAP VIEW



General Operation**PAN VIEW**

To access PAN view, rotate the inner knob clockwise  while in MAP view mode. To return to MAP view mode, rotate the inner knob counterclockwise. 

In PAN view the map is always oriented north and south. The aircraft symbol, representing your position, rotates to reflect the actual aircraft heading relative to the north oriented map.

The same map scale commands apply to PAN view as well.

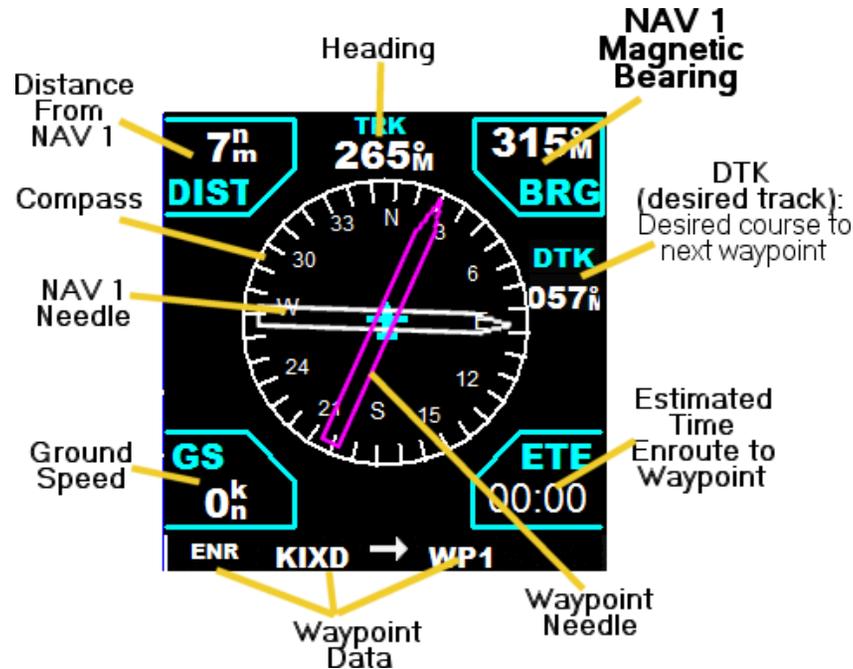


General Operation

NAV VIEW

You can access NAV mode by pressing the Smart Function Key labeled **NAV**.

Where MAP view is based on your aircraft relative to your flight plan and position from navigation aids and facilities, NAV mode displays your current heading in relation to the NAV 1 radio signal, if received, and the heading to your next waypoint (assuming an active flight plan). The NAV 1 needle is a radio magnetic indicator that does not require manual tuning.



General Operation

If a NAV 1 signal is not being received the needle will not be visible and a flag will appear.

If no active leg is operating in the GPS system the waypoint needle will not be visible.



General Operation

WORKING WITH FLIGHT PLANS

Access to the Flight Plan page is obtained via the Smart Function Key labeled FPL. 

If this label is not visible press the **Map** key and go to Map Mode. This will reset the Smart Function Keys to display this group of functions.

A Flight Simulator Flight Plan must be loaded, otherwise no data will be displayed on this page.

The departure and destination ICAO IDs are displayed at the top of the screen. Current waypoint leg status is displayed at the bottom.

The following data fields are also provided:

WYPT	Name of the individual waypoint.
DTK	Desired Track. The desired course between the active from and to waypoints.
DIS	Distance between waypoints. This is the distance between the waypoint listed and the waypoint above it on the list.
CUM	The cumulative distance along the flight plan which each waypoint represents. The last waypoint listed is the destination and represents to total distance of the flight.



General Operation

Adding Waypoints to the Flight Plan



Step 1 is to activate the cursor on the screen. To do this, press the center of the knob (**CRSR**) in once. This will activate the cursor

Step 2.

Turn the outer knob clockwise ↻ or counterclockwise ↻

This will move the cursor up and down the list of waypoints. Stop at the position where you want to add a waypoint. →

Step 3.

Press the Smart Function Key labeled **ADD**.



General Operation

The Add New Waypoint menu will be displayed. You will see the waypoint identifier field highlighted. You now have access to the entire database of possible waypoints.

Step 4:

Turn the inner knob clockwise  or counterclockwise 
You can scroll through the entire database using the outer knob to move the cursor and the inner knob to scroll through letters and numbers.

Note: After you've turned the small knob to highlight the first letter, you can type the identifier on your keyboard.



General Operation

All of the information in the database on this waypoint will be displayed on the Add New Waypoint page.

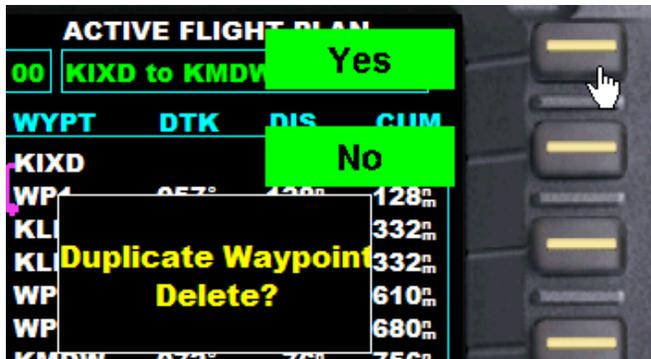
Step 5:
Press the **ENT** button once to confirm the selected waypoint.



The new waypoint will now be displayed at the insertion point of your flight plan.



If the waypoint is a duplicate of one that is already in the flight plan you will be prompted to delete the new entry (yes or no).



General Operation

Deleting Waypoints from a Flight Plan



Step 1 is to activate the cursor on the screen. To do this, press the center of the knob (**CRSR**) in once. This will activate the cursor

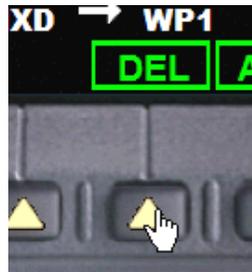
Step 2.

Turn the outer knob clockwise ↻ or counterclockwise ↻

This will move the cursor up and down the list of waypoints. Stop at the waypoint that you want to delete. →

Step 3.

Press the Smart Function Key labeled **DEL**. You will be asked to confirm deletion (yes or no) before the waypoint is actually deleted.



General Operation

Direct To Flight Plan

The GPS's direct-to function provides a quick method of setting a course to a destination waypoint. Once a direct-to is activated, the GPS will establish a point-to-point (great circle) course line from your current position to the selected direct-to destination.



Step 1:
Press the **D➔** button.

The Direct To Waypoint menu will be displayed. You will see the waypoint identifier field highlighted. You now have access to the entire database of possible waypoints.

Step 2:
Turn the inner knob clockwise  or counterclockwise 
You can scroll through the entire database using the outer knob to move the cursor and the inner knob to scroll through letters and numbers.

Press the **ENT** button once to confirm the selected waypoint, and again to activate the direct-to function.

Note: After you've turned the small knob to highlight the first letter, you can type the identifier on your keyboard.



General OperationSelecting a Destination by Facility Name

In addition to selecting a destination by identifier, the Select Direct-to Waypoint page also allows you to select airports, VORs, and NDBs by facility name. If the database includes duplicate entries for the facility name or city you enter, you can view additional entries by continuing to rotate the small right knob during the selection process.



Step 1:
Press the  button.

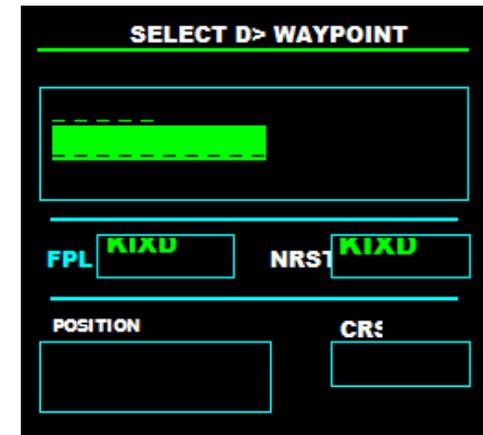
Step 2:

Rotate the outer knob to highlight the facility name (second line in the figure above) or the city field (third line). Use the inner and outer knobs to enter the facility name of the desired destination waypoint. As you spell the facility name, the GPS will select the first entry in the database based upon the characters you have entered up to that point. Continue rotating the small right knob to scroll through any additional database listings for the selected facility name or city. You can also scroll backwards with the small right knob if you scroll past the desired waypoint.

Note: After you've turned the small knob to highlight the first letter, you can type the identifier on your keyboard.

Step 3:

Press the **ENT** button once to confirm the selected waypoint, and again to activate the direct-to function.



General OperationSelecting a Destination from the Active Flight Plan

If you're navigating an active flight plan, you can select any waypoint contained in the flight plan as a direct-to destination from the Select Direct-to Waypoint page.



Step 1:
Press the  button.

Step 2:
Rotate the outside knob to highlight the flight plan (FPL) field.

Step 3:
Rotate the inner knob to display a window showing all waypoints in the active flight plan. Continue rotating the small knob to scroll through the list and highlight the desired waypoint.

Step 4:
Press the **ENT** button once to confirm the selected waypoint, and again to activate the direct-to function.



General OperationSelecting the Nearest Airport as a Direct-to Destination

The Select Direct-to Waypoint page always displays the nearest airports (to your current position) on the NRST field. Navigating directly to a nearby airport can be accomplished using the following step by step instructions.

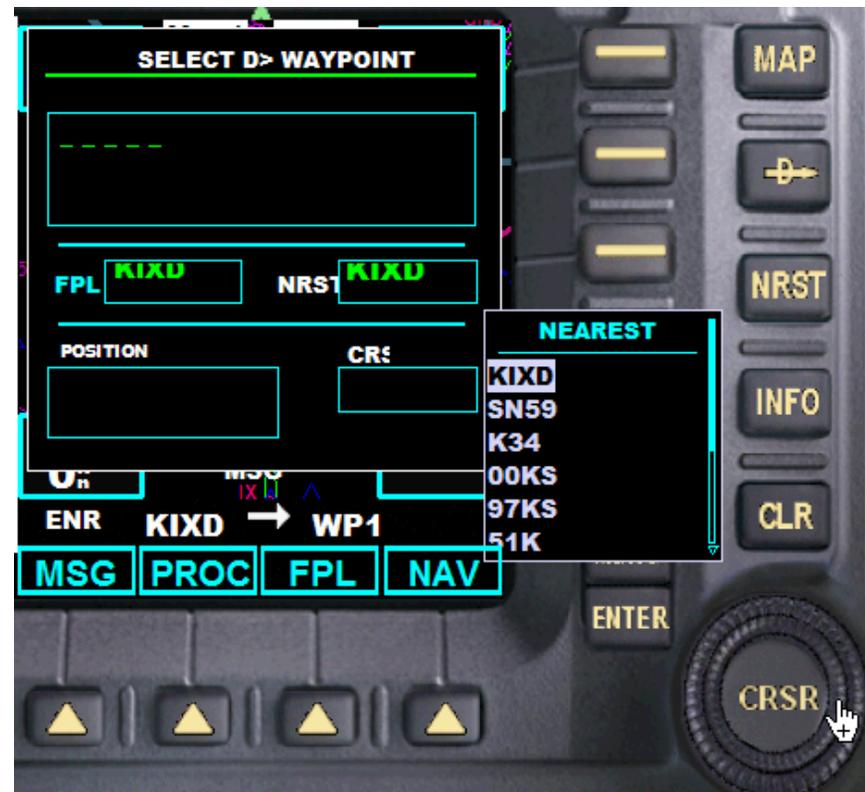


Step 1:
Press the \rightarrow button.

Step 2:
Rotate the outside knob to highlight the nearest airport (NRST) field.

Step 3:
Rotate the inner knob to display a window showing as many as nine nearby airports. Continue rotating the small knob to scroll through the list and highlight the desired airport.

Step 4:
Press the **ENT** button once to confirm the selected waypoint, and again to activate the direct-to function.



General Operation

PROCEDURES (PROC) SCREEN

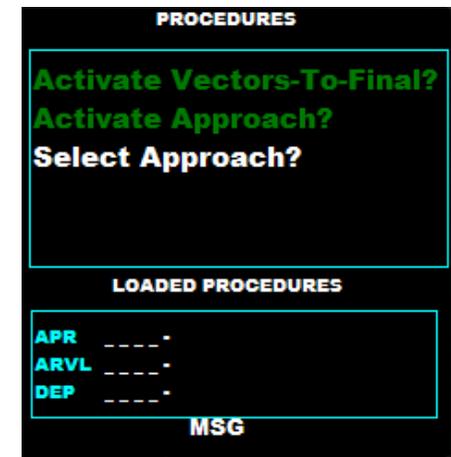
The GNS 480 will allow you to fly non-precision approaches to airports with published instrument approach procedures. To select an approach:



Step 1:
Press the Smart Function
Key labeled **PROC**.

Step 2:
Rotate the outside knob to highlight **Select Approach**.

Step 3:
Press the **ENT** button.



General Operation

A window will appear listing the available procedures.

Step 4:

Rotate the outer knob to highlight the desired approach and press the **ENT** button.

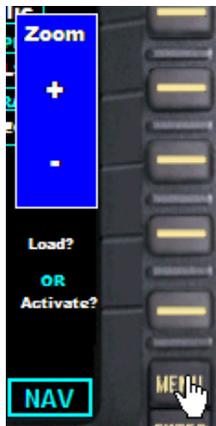


General Operation

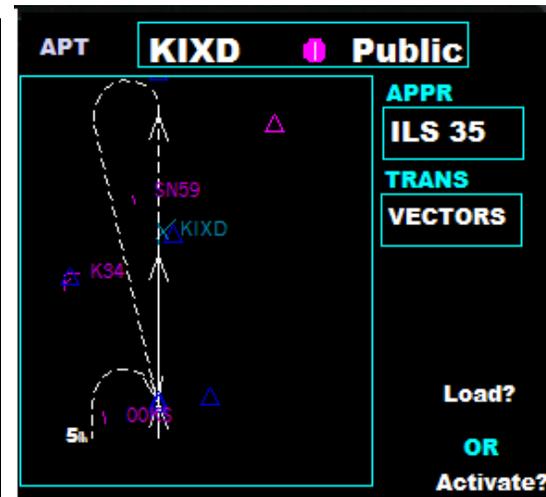
A second window will appear listing the available transitions.

Step 5:

Rotate the outer knob to highlight the desired transition waypoint and press the **ENT** button.



The map scale factor on this page can be changed by pressing the **Menu** key, and then the Smart Key for + or - as desired.



General Operation

Step 6:

Rotate the outer knob to highlight **Load?** or **Activate?**
Load will add the approach to the flight plan without immediately using it for navigation guidance. This allows you to continue

Step 7:

Press the **ENT** button.



General Operation

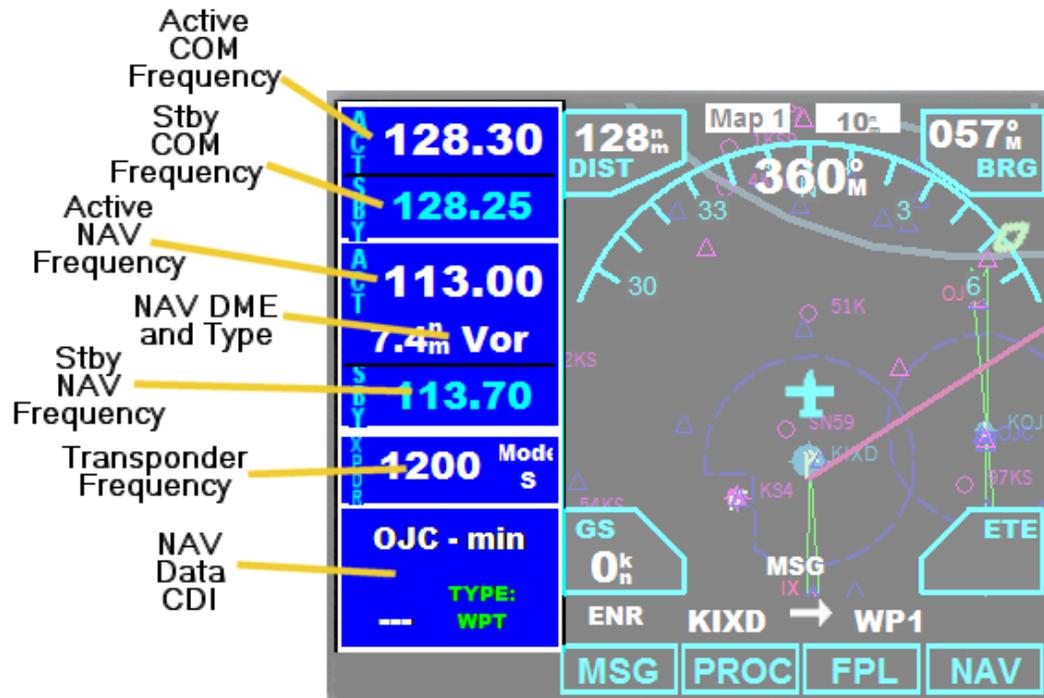
RADIO OPERATION

Data readouts for the radios are located on the left hand side of the screen.



Access to functions, data and frequency changes for each radio is obtained using the selector keys to the left of the radio display.

Actual frequency changes for the COM and NAV radios are made using the outer and inner knobs (outer for whole numbers, inner for decimals).



General Operation

COM Radio Operation

Press the **COM** button to access the COM radio functions.

The standby (Stby) frequency will be highlighted. This is the frequency that will be changed using the outer and inner knobs. The annunciator at the lower right of the map screen will indicate "COM".

Additionally, the following Smart Function Keys are available to you for the following:

	Swaps Stby and Active frequency. Press this key after you make your frequency change
RCL	Recall key. You can recall saved frequency values for convenience.
SAVE	Saves frequencies for the above recall list. Put frequencies that you access often here
SQ	Squelch. Use this key to activate squelch mode. An SQ annunciator will replace the ACT (Active) annunciator.



General Operation**To change the COM Frequency:**

Step 1:

Press the **COM** key.

Step 2:

Change the Stby frequency by using the outer and inner knobs.

Step 3:

Press the Smart Function Key labeled 

Step 4:

Close COM mode by pressing the **COM** key again.**To recall a frequency from your saved list:** 

Step 1:

Press the **COM** key.

Step 2:

Press the Smart Function Key labeled **RCL**.

Step 3:

Push the **CRSR** knob sequentially to highlight the desired frequency.

Step 4:

Press the **Enter** key.

The COM radio will be set to the saved frequency.

To save a frequency:Just press the Smart Function Key labeled **SAVE**. The frequency will be rejected if it is a duplicate.

General Operation

NAV Radio Operation

Press the **VOR** button to access the NAV radio functions.

The standby (Stby) frequency will be highlighted. This is the frequency that will be changed using the outer and inner knobs. The annunciator at the lower right of the map screen will indicate "VOR".

Additionally, the following Smart Function Keys are available to you for the following:

	Swaps Stby and Active frequency. Press this key after you make your frequency change
RCL	Recall key. You can recall saved frequency values for convenience.
SAVE	Saves frequencies for the above recall list. Put frequencies that you access often here

There are also two Smart Keys available in this mode:

Signal	Toggles the signal strength dialog on and off
Audio	Switches audio IDENT signal on and off



General Operation**To change the NAV 1 Frequency:**

Step 1:

Press the **VOR** key.

Step 2:

Change the Stby frequency by using the outer and inner knobs.

Step 3:

Press the Smart Function Key labeled 

Step 4:

Close NAV mode by pressing the **VOR** key again.**To recall a frequency from your saved list:** 

Step 1:

Press the **VOR** key.

Step 2:

Press the Smart Function Key labeled **RCL**.

Step 3:

Push the **CRSR** knob sequentially to highlight the desired frequency.

Step 4:

Press the **Enter** key. The NAV 1 radio will be set to the saved frequency.**To save a frequency:**Just press the Smart Function Key labeled **SAVE**. The frequency will be rejected if it is a duplicate.

General OperationTransponder Radio Operation

Press the **XPDR** key. This will activate the transponder radio mode.

Transponder Control Mode will allow you to control your transponder from the GNS 480 front panel. Some features are common to the available transponders and are explained below.

Ident

Press the **IDNT** key once to activate the Ident mode. The key label will be highlighted and an IDNT annunciator will appear by the squawk code for 20 seconds.

Standby

Press the **STBY** key to place the transponder in Standby mode. No information will be transmitted while in Standby mode. A SBY annunciator will appear to the left of the squawk code.

ON

Press the **ON** key to enable Mode A operation. An ON annunciator will appear to the left of the squawk code.

ALT

Press the **ALT** key to enable Mode CIS operation, which also sends altitude data along with your squawk code. An AU annunciator will appear to the left of the squawk code.



General Operation

Press the Function key (**FN**) to display the screen on the right.

To change the transponder frequency:

Step 1:

From any operation mode, press the **XPDR** key to open Transponder Control Mode.

Step 2:

Press the **FN** key.

Step 3:

Press the Smart Keys in the desired number sequence as illustrated. Once the 4th number has been entered the process is complete.

Step 4:

Press the **XPDR** key once again to close Transponder Control Mode.



General Operation**FUEL DATA MODE**

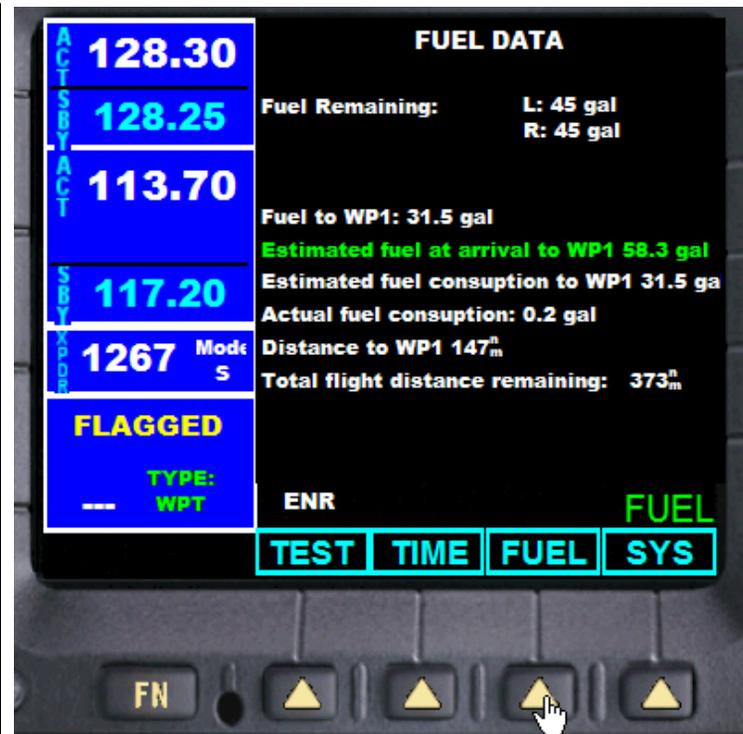
Fuel data mode provides a comprehensive display of information on fuel quantity and consumption for your flight plan.

To enter Fuel Mode press the **FN** (Function) key to display the 2nd Smart Function Key menu, and then press the Smart Function Key labeled **FUEL**

If you have a flight plan loaded the following data will be available to you:

1. Fuel Quantity
2. Fuel required to reach the next waypoint
3. Estimated fuel remaining after reaching the next waypoint
4. Actual fuel consumption since takeoff
5. Distance, in nautical miles, to the next waypoint
6. Total distance to destination

If insufficient fuel to reach the next waypoint is in your fuel tanks item 3 above will offer a warning in red text.



General Operation**TIMER MODE**

The Timer Mode allows you to set or view several timing functions. You can set one or two timers as count up or count down timers. You can view the Trip Time, Trip Distance, Flight Time, and Flight Distance. The Trip Time and Trip Distance show the time and distance traveled since being reset. The Flight Time and Flight Distance show the time and distance traveled since the Trigger Speed was reached.

Enter the Trigger Speed to set the threshold where the Flight timers start after the aircraft reaches the selected speed. Use the Large knob to highlight the selection to change.

Timer 1 and Timer 2

Edit the Timer values by pressing in the **CRSR** knob sequentially to highlight the timer you wish to set. Press the 1 Min or 2 Min keys to instantly insert one or two minutes into the time. Use the outer knob to change the value of timer hours up or down, and the inner knob to set minutes. Press the **DISP** Smart Key to display the Timer value on the Map pages. The DISP key will be highlighted when the particular timer is set to appear on the map pages. Press the Smart Key labeled **CLR** to reset the values to 0.

Trip Time and Distance

The Trip Time and Distance counters display the time and distance traveled since the last time they were reset. Press the **CRSR** knob sequentially until trip time is highlighted. Press the **DISP** Smart Key to display the Trip Timer value on the Map pages. To clear the Trip Time value press the **CLR** key.



General Operation

Timers 1 and two can count up or down. Note that you must provide a time value first before the timer can count down.



To add any timer to the map view pages simply highlight the timer and press the Smart Key labeled **DISP**.

Each timer selected will be displayed on the map.



General Operation

TRAFFIC MODE

The GNS 480 is configured to display air traffic. You can reach Traffic Mode from any screen by pressing the **FN** key twice to display Smart Function Key menu 3. Press the **TFC** Smart Function Key to enter Traffic Mode.

Traffic is displayed relative to the latest reported position.



To change the map scale simply press the CRSR knob will in Traffic Mode to display the Zoom Menu. Use the Smart Keys to change the scale + or -

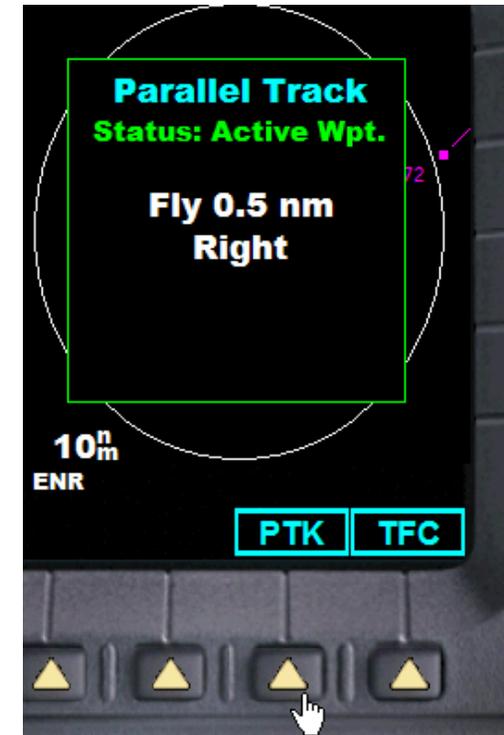


General Operation**PARALLEL TRACK DATA**

The Parallel Track (PTK) function allows you to create a parallel course offset of 1 to 99 nm to the left or right of your current flight plan. You must have FROM and TO waypoints defined. Choose Left or Right of the current course, and the offset distance.

Activating Parallel Track

Press the **FN** key twice and then the **PTK** key to reach the Parallel Track function.



General Operation

SYSTEM (SYS) MODE

The System mode provides information about GPS status, system Software Versions (VERS), for individual configurations.

GPS Status

Press **FN** and then the **SYS** key to reach the System functions. The GPS function shows a map of the satellite locations with ID and other system information. On the right side of the display, a bar graph is shown for each satellite ID.

WAAS	"Active" indicates WMS corrections are being used "Standby" is shown if WAAS corrections are not being used. WAAS corrections may be enabled or disabled on the Configuration page. "Disabled" indicates that WMS corrections have either been disabled using the Configuration setting, or the use of WAAS is prohibited for the selected approach
Time	Current UTC time computed from the GPS constellation.
Lat/Lon:	Current position in degrees, minutes, and seconds.

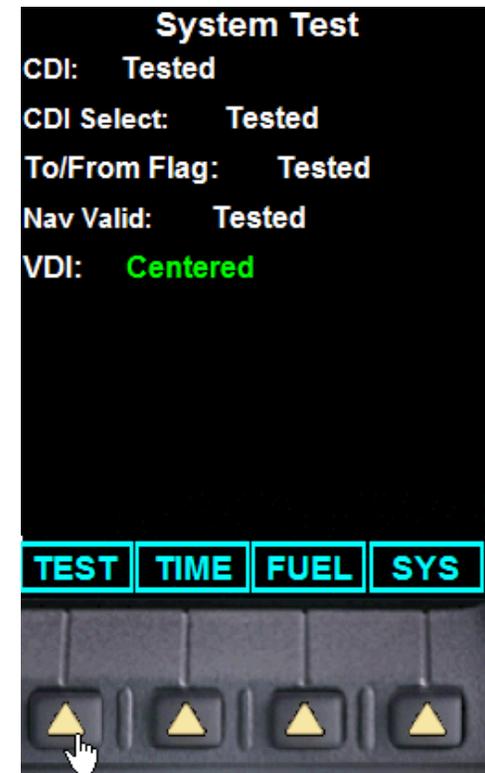


General Operation**TEST MODE**

The GNS 480 can perform a complete internal diagnostic of all critical GPS and radio functions. To initiate a test press the **FN** key and then press the Smart Function Key labeled **TEST**.

The system will perform a complete diagnostic and report the results: →

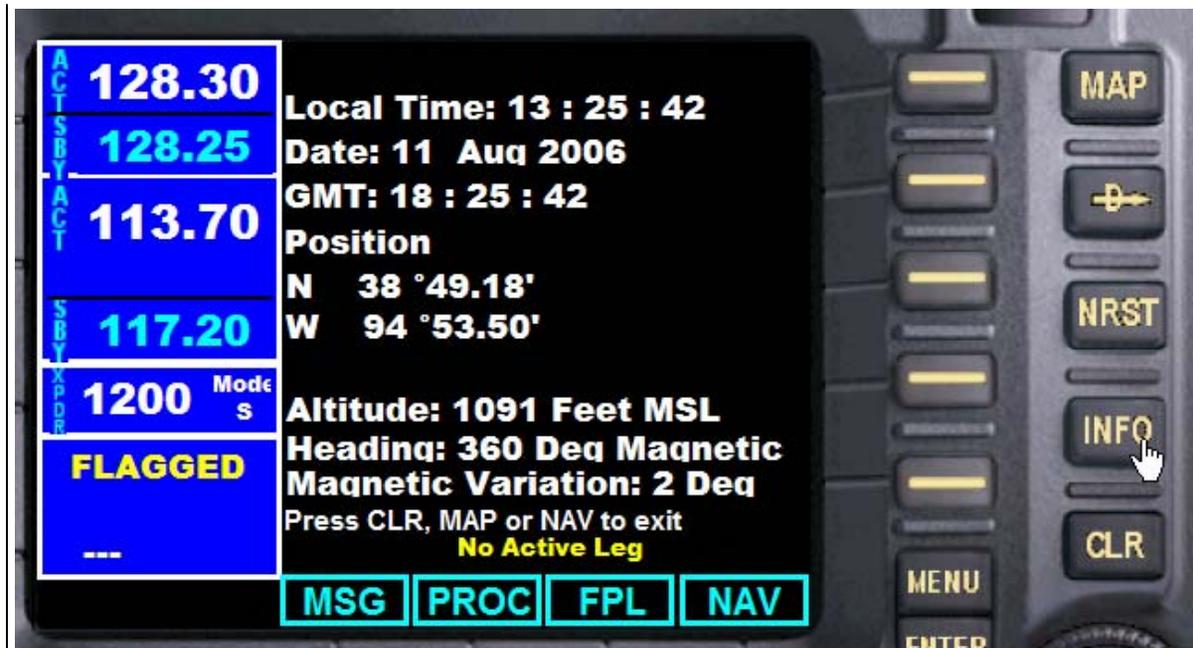
You can cancel the test at any time by pressing the **CLR** key.



General Operation**INFO MODE**

This mode displays local time and GMT, your current position, altitude and heading for quick reference.

Simply press the **INFO** key from any mode to access it.



General Operation**MESSAGE (MSG) SCREEN**

The Message screen is used to view Airspace Alerts.



When an airspace alert message exists the MSG icon on the map display will flash. Just press the Smart Function Key labeled MSG to view the Message Screen.

Airspace alerts are based on three-dimensional data (latitude, longitude, and altitude). The alert boundaries for controlled airspace are also divided into sectors to provide complete information on any nearby airspace. An altitude buffer of 200 feet is included to provide an extra margin of safety above and below the published limits.

Once you have been provided an airspace alert message, detailed information concerning the specific airspace can be viewed on the **Nearest Airspace** page. The Nearest Airspace page displays the airspace name, status, and an estimated time to entry (if applicable).



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