

**Pilot's Operating Handbook and  
FAA Approved Airplane Flight Manual  
Supplement  
For**

# **Garmin GNS 430 GPS Navigator**

When a Garmin GNS 430 GPS Navigator with NAV, ILS, and COM is installed in the Cirrus Design SR20 this Supplement is applicable and must be inserted in the Supplements Section (Section 9) of the Cirrus Design SR20 Pilot's Operating Handbook. This document must be carried in the airplane at all times. Information in this supplement either adds to, supersedes, or deletes information in the basic SR20 Pilot's Operating Handbook.

• Note •

This POH Supplement Revision dated Revision 2: 08-15-07 supersedes and replaces the Revision 1 of this supplement dated 05-25-05.

*Serials 1005 thru 1267;* This supplement replaces GNS 430 GPS Navigator supplement. P/N 11934-S03 original release or later.

FAA Approved Joseph C. Miss Date Aug 15 2007  
for Royace H. Prather, Manager  
Chicago Aircraft Certification Office, ACE-115C  
Federal Aviation Administration

## Section 1 - General

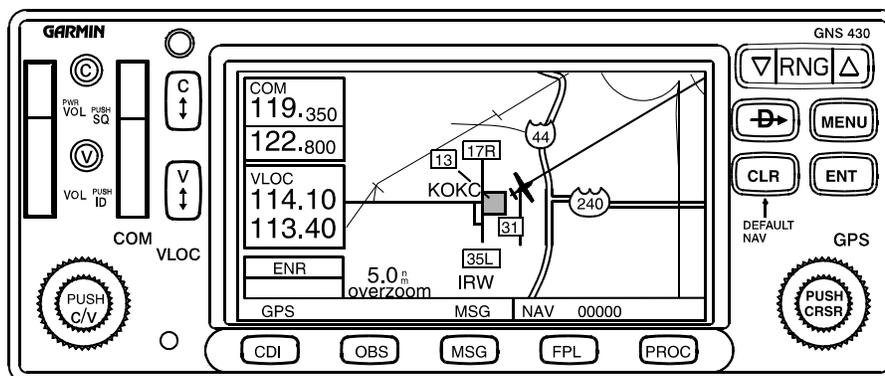
The airplane is equipped with a Garmin GNS 430 GPS Navigator with VHF Nav, ILS, and VHF Com herein referred to as the “Navigator.” The GNS 430 is capable of providing IFR enroute, terminal, and approach navigation with position accuracies better than 15 meters. The system utilizes the Global Positioning System (GPS) satellite network to derive the airplane’s position (latitude, longitude, and altitude) and the altitude digitizer to enhance the altitude calculation.

The GARMIN GNS 430 GPS Navigator may be installed in single or dual installations. If one GNS 430 is installed, it will be designated ‘GPS 1,’ and either a GARMIN GNC 250XLGPS Navigator or a GARMIN GNC 420 GPS Navigator will be installed as GPS 2. Refer to applicable supplements for descriptions of these units.

If two GARMIN GNS 430 Navigators are installed, the upper unit will be designated ‘GPS 1’ and the lower unit will be designated ‘GPS 2.’ In these installations, the MFD and the HSI will display GPS 1 information and the CDI (VOR/LOC/ILS/GS Indicator) will display GPS 2 information.

• Note •

*Refer to GPS 430 INTEGRATION in the NORMAL Procedures Section of this supplement for a more detailed description of GPS 430 integration in the various configurations.*



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**Figure - 1**  
**Garmin GNS 430 Front Panel**

## Section 2 – Limitations

Provided the GPS Navigator is receiving adequate usable signals, it has been demonstrated capable of and has been shown to meet the accuracy specifications of:

1. VFR/IFR, enroute, terminal, and instrument approach (GPS, VOR) operations, that is, enroute, terminal, and instrument approach within the U.S. National Airspace System, North Atlantic Minimum Navigation Performance Specification (MNPS) Airspace using the WGS-84 (or NAD 83) coordinate reference datum in accordance with the criteria of AC 20-138, AC 91-49, and AC 120-33. Navigation data is based upon use of only the global positioning system (GPS) operated by the United States.
2. The Garmin GNS 430 Pilot's Guide and Reference, P/N 190-00140-00, Revision F dated July 2000 (or later appropriate revision) must be immediately available to the flight crew whenever navigation is predicated on the use of the GPS Navigator. The software status stated in the pilot's guide must match that displayed on the equipment.
3. The Navigator must utilize software version 2.XX (where X is a digit, 0-9) or later.
4. IFR enroute and terminal navigation is prohibited unless the pilot verifies the currency of the database or verifies each selected waypoint for accuracy by reference to current approved data.
5. GPS instrument approaches must be accomplished in accordance with approved instrument approach procedures that are retrieved from the Navigator's NavData database. The database must incorporate the current update cycle.
  - a. Instrument approaches must be conducted in the approach mode and RAIM must be available at the Final Approach Fix.
  - b. Accomplishment of ILS, LOC, LOC-BC, LDA, SDF, and MLS approaches are not authorized in GPS mode.
  - c. When an alternate airport is required by the applicable operating rules, it must be served by an approach based on other than GPS navigation, the aircraft must have operational equipment capable of using that navigation aid, and the required navigation aid must be operational.

6. The aircraft must have other approved navigation equipment installed and operating appropriate to the route of flight.
7. The Garmin GNS 430 meets RNP5 (BRNAV) requirements of AC 90-96 and is in accordance with AC 20-138, and JAA AMJ 20X2 Leaflet 2 Revision 1, provided it is receiving usable navigation information from the GPS receiver.
8. Do not use the Terrain Display for navigation of the aircraft. The Terrain Display does not provide TAWS capability and is intended to serve as a situational awareness tool only and does not provide the accuracy fidelity on which to solely base terrain or obstacle avoidance maneuvering decisions.

### Section 3 - Emergency Procedures

1. If GPS Navigator information is not available or is invalid, utilize remaining operational navigation equipment as required.
2. If “RAIM NOT AVAILABLE...” or “RAIM POSITION WARNING” message is displayed, continue to navigate using the GPS equipment or revert to an alternate means of navigation appropriate to the route and phase of flight. When continuing to use GPS navigation, position must be verified every 15 minutes using another IFR approved navigation system.

### Section 4 - Normal Procedures

The GARMIN GNS 430 Navigator is available in single or dual installations. Operating procedures for each unit of a dual installation are identical. *Refer to the GNS 430 Integration* paragraphs in this supplement for integration differences when single and dual units are installed. Normal operating procedures are outlined in the GARMIN GNS 430 Pilot's Guide and Reference, P/N 190-00140-00, Revision F dated July 2000 (or later appropriate revision).

#### Activate GPS

1. Battery Master Switch ..... ON
2. Avionics Power Switch ..... ON
3. Navigator Com/ Power Switch..... Rotate 'ON'

The Navigator will display a welcome page while the self-test is in progress. When the self test is successfully completed, the Navigator asks for NavData database confirmation, acquires position, and then displays the acquired position on the Navigator's display and on the MFD.

• Note •

The Navigator is not coupled to an air and fuel data computer. Manual fuel-on-board and fuel flow entries must be made in order to use the fuel planning function of the AUX pages.

The GPS Navigator utilizes altitude information from the altitude encoder's altitude digitizer to enhance altitude information.

## GNS 430 Integration

The GNS 430 Navigator is integrated into the SR20 Avionics installation in three configurations:

1. Single GARMIN GNS 430 (GPS 1) interfaced with the CDI and MFD and a single GARMIN GNC 250XL (GPS 2) not integrated with a remote indicator.
  - a. In this configuration, pressing the alternate-action CDI push-button on the GARMIN GNS 430 (GPS 1) alternately selects GPS or NAV for display on the CDI each time the button is pressed. The CDI source is indicated by illumination of the "GPS" or "VLOC" annunciation in the lower left corner of the GNS 430 display.

• Note •

The CDI displays course deviation from a VOR, Localizer (LOC) or Glideslope (G/S) when VLOC is selected for display and displays GPS track deviation when GPS is the selected navigation source.

- b. GPS 2 in this configuration is a GARMIN GNC 250XL GPS Navigator with VHF Com. This unit displays GPS data on the unit's display panel only and is not integrated with any remote indicator. *Refer to the SR20 POH Supplement for GARMIN GNC 250XL GPS Navigator, P/N 11934-S05.*

2. Single GARMIN GNS 430 (GPS 1) interfaced with the HSI and MFD and a single GARMIN GNC 420 (GPS 2) interfaced with the CDI (VOR/LOC) indicator.
  - a. In this configuration, pressing the alternate-action CDI push-button on the GARMIN GNS 430 (GPS 1) alternately selects GPS or NAV for display on the HSI and MFD each time the button is pressed. The HSI source is indicated by illumination of the “GPS” or “VLOC” annunciation in the lower left corner of the GNS 430 display.

• Note •

The HSI displays course deviation from a VOR, Localizer (LOC), or Glideslope (G/S) when VLOC is the navigation source and displays GPS track deviation when GPS is the selected navigation source.

- b. GPS 2 in this configuration is a GARMIN GNC 420 GPS Navigator interfaced with the CDI (VOR/LOC Indicator). This unit displays GPS data on the unit’s display panel and on the remote CDI (VOR/LOC Indicator). *Refer to the SR20 POH Supplement for GARMIN GNC 420 GPS Navigator, P/N 11934-S23.*
3. Dual GARMIN GNS 430 units are installed. GPS 1 in this configuration is the uppermost GNS 430 unit in the console and GPS 2 is the lower GNS 430 unit.
  - a. GPS 1 in this configuration is a GARMIN GNS 430 GPS Navigator with VHF Com interfaced with the HSI and MFD. Pressing the alternate-action CDI push-button on GPS 1 alternately selects GPS or NAV for display in the HSI and MFD each time the button is depressed. The HSI source is indicated by illumination of the “GPS” or “VLOC” annunciation in the lower left corner of the GNS 430 display.

• Note •

The HSI displays course deviation from a VOR, Localizer (LOC) or Glideslope (G/S) when VLOC is the navigation source and displays GPS track deviation when GPS is the selected navigation source.

- b. GPS 2 in this configuration is a GARMIN GNS 430 GPS Navigator with VHF Com interfaced with the CDI (VOR/LOC/ILS/GS Indicator). Pressing the alternate-action CDI push-button on GPS 2 alternately selects GPS or NAV for display in the CDI each time the button is depressed. The HSI source is indicated by illumination of the “GPS” or “VLOC” annunciation in the lower left corner of the GNS 430 display.

• Note •

The CDI displays course deviation from a VOR, Localizer (LOC) or Glideslope (G/S) when VLOC is the navigation source and displays GPS track deviation when GPS is the selected navigation source.

## Deactivate GPS

1. Navigator Com/ Power Switch ..... Rotate CCW ‘OFF’

## Section 5 - Performance

No change from basic Handbook.

## Section 6 - Weight & Balance

No change from basic Handbook.

## Section 7 - Systems Description

• Note •

This supplement provides a general description of the Garmin GNS 430, its operation, and SR20 interface. For a detailed description of the GNS 430 and full operation instructions *refer to the Garmin GNS 430 Pilot's Guide and Reference, P/N 190-00140-00, Revision F dated July 2000 (or later appropriate revision).*

The following paragraphs describe a single GARMIN GNS 430 unit and its functions. In the event a second GNS 430 is installed, the second unit will function as described below except that the GPS navigator is designated GPS 2, the NAV receiver is designated NAV 2, and the VHF communications receiver is designated COM 2. The GPS 2 GPS navigator and

VHF NAV is powered by 28 VDC through the Avionics Master Switch and the 5-amp GPS2 circuit breaker on the Avionics Non-essential Bus. 28 VDC for transceiver operation is supplied through the Avionics master Switch and the 7.5-amp COM2 circuit breaker on the Avionics Non-Essential Bus.

## **GNS 430 Integrated GPS/NAV/COM System**

This airplane is equipped with a GNS 430 integrated GPS navigator, NAV receiver, and COM transceiver. The GPS navigator consists of a GPS receiver, a navigation computer, and a Jeppeson NavData database all contained in the GNS 430 control unit mounted in the center console. The GPS is designated 'GPS 1.' A VHF NAV receiver and tuner for receiving VHF Omrange (VOR), Localizer (LOC), and Glideslope (G/S) is also integrated into the control unit. The NAV receiver is designated 'NAV 1.' Additionally, a VHF communications receiver, designated 'COM 1,' is also integrated into the unit. All tuning and display controls for the GPS, NAV, and COM are located in the GNS 430 control/display in the center console. The following paragraphs describe the GPS, NAV, and COM functions of this unit. For a complete description, as well as full operating instructions, *refer to the Garmin GNS 430 Pilot's Guide and Reference.*

### **GPS Navigator**

The Garmin GNS 430 GPS navigator is the primary system (GPS 1), is IFR certified, and is coupled to the airplane's HSI (or HSI) and MFD. Normally, the second GPS Navigator provides backup and is approved for VFR use only. If the second GPS is also a Garmin 430, it will be coupled to the CDI and is also approved for IFR use. The Garmin GPS 430 is capable of providing IFR enroute, terminal, and approach navigation with position accuracies better than 15 meters. The system utilizes the Global Positioning System (GPS) satellite network to derive the airplane's position (latitude, longitude, and altitude) and the altitude digitizer to enhance the altitude calculation. The GPS 1 antenna is located beneath the cabin roof along the airplane centerline and the GPS 2 antenna is located under the glareshield. All GPS navigator controls and functions are accessible through the GNS 430 front control panel located in the center console. The panel includes function keys, power switches, MSG and Nav status annunciators, color LCD display, two concentric selector knobs on each panel, and a

Jeppesen NavData card slot in each panel. The GNS 430 navigator is powered by 28 VDC through the 5-amp GPS1 circuit breaker on the Avionics Essential Bus.

The Jeppesen Navigation Database provides access to data on Airports, Approaches, Standard Instrument Departures (SIDs), Standard Terminal Arrivals (STARs), VORs, NDBs, Intersections, Minimum Safe Altitudes, Controlled Airspace Advisories and Frequencies. North American and International databases are available. Database information is provided on a card that can be inserted into the card slot on the GPS unit. Subscription information is provided in a subscription packet provided with each system.

### **Navigation (Nav) Receiver**

The Garmin GNS 430 provides an integrated Navigation (NAV) receiver with VHF Omni-range/Localizer (VOR/LOC) and Glideslope (G/S) capability. The VOR/LOC receiver receives on a frequency range from 108.000 Mhz to 117.950 Mhz with 50 kHz spacing. Glideslope is received from 329.150 to 335.00 in 150 kHz steps. The Nav receiver controls are integrated into the Garmin GNS 430 control mounted in the center console. The receiver control provides active and standby frequency indication, frequency memory storage, and knob-operated frequency selection. IDENT audio output for VOR and LOC is provided to the audio system. The Nav antenna is mounted on top of the vertical tail. 28 VDC for navigation receiver operation is controlled through the Avionics Master Switch on the bolster switch panel and supplied through the 5-amp GPS 1 circuit breaker on the Avionics Essential Bus. The airplane is equipped with a Garmin GNS 430 integrated GPS Navigator, Navigation (NAV) receiver with VHF Omni-range/Localizer (VOR/LOC) and Glideslope receiver.

### **Communication (COM) Transceiver**

The GNS 430 includes a digitally-tuned integrated VHF communications (COM) transceiver. The transceiver and integrated controls are mounted in the Garmin GNS 430 unit. The transceiver receives all narrow- and wide-band VHF communication transmissions transmitted within a frequency range of 118.000 MHz to 136.975 MHz in 25.0 kHz steps (720 channels). For European operations, the COM can be operator configured for 8.33 kHz channel spacing (2280 channels). The tuning controls are collocated with the NAV at the left

side of the GNS 430 front panel. Frequency tuning is accomplished by rotating the large and small concentric knobs to select a standby frequency and then transferring the frequency to the active window. The COM frequency display window is at the upper left corner of the GNS 430 display. Auto-tuning can be accomplished by entering a frequency from a menu. The COM 1 antenna is located above the cabin on the airplane centerline. 28 VDC for transceiver operating is controlled through the Avionics Master Switch and supplied through the 7.5-amp COM1 circuit breaker on the Avionics Essential Bus.

## **TERRAIN Interface\***

• Note •

\*TERRAIN functionality is a standard feature found in GNS 430 units with main software version 5.01 or above and valid terrain and obstacle databases installed.

Garmin TERRAIN is a terrain awareness system incorporated into GNS 430 units to increase situational awareness and aid in reducing controlled flight into terrain. The TERRAIN function displays altitudes of terrain and obstructions relative to the aircraft's altitude and are advisory in nature only. Individual obstructions may be shown if available in the database, however, not all obstructions may be available in the database and data may be inaccurate. TERRAIN information should be used as an aid to visual acquisition and not use to navigate or maneuver to avoid terrain.

For for a more detailed description of the TERRAIN function, *refer to the Garmin GNS 430 Pilot's Guide and Reference, P/N 190-00140-00, Revision H dated May 2006 or later revision.*