

Cirrus SR20 (classical cockpit) Operating Manual



This aircraft was designed for MS Flightsimulator™ 2004 only.

The aircraft was developed by:

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Garmin Avionics by Don Kuhn

Please write any comments, suggestions or bug reports to the forum on our website: <http://www.gkflusi.de/nuke>

IMPORTANT INFORMATION

This manual is for use with MS Flightsimulator™ only
NOT FOR REAL WORLD NAVIGATION

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The 2D Panel



- | | | | |
|----|-----------------------------|-------|------------------------------------|
| 1 | Annunciator Panel | 1 | Instrument Lights |
| 2 | Altitude Preselector | 2 + 3 | Cabin Lights |
| 3 | Davtron M803 Digital Clock | 13 | ARNAV GPS |
| 4 | Airspeed Indicator | 14 | Elevator Trim Down Click Spot |
| 5 | Attitude Indicator | 15 | Autopilot Master Switch Click Spot |
| 6 | Altimeter | 16 | Elevator Trim Up Click Spot |
| 7 | Garmin G1102 VOR2 Indicator | 17 | Rudder Trim |
| 8 | Turn Coordinator | 18 | Elevator Trim Indicator |
| 9 | NSD-360 HSI | | |
| 10 | Vertical Speed Indicator | | |
| 11 | Switches (left to right) | | |
| | 1 Alternator | | |
| | 2 Battery | | |
| | 3 Avionics Master Switch | | |
| | 4 De-Ice Switch | | |
| | 5 Pitot Heat Switch | | |
| | 6 Navigation Lights Switch | | |
| | 7 Strobe Lights Switch | | |
| | 8 Landing Light Switch | | |
| 12 | Interior Light Switches | | |

Engine Controls [Shift-5]



- | | | | |
|---|---|---|---------------------|
| 1 | Tachometer | 5 | Volt- / Amperemeter |
| 2 | Exhaust Gas / Cylinder Head Temperature Indicator | | |
| 3 | Manifold Pressure / Fuel Flow Indicator | | |
| 4 | Oil Temperature / Pressure Indicator | | |

Radio Stack [Shift-2]



Garmin GNA 340 Audio Panel

Garmin GNS 430 GPS 1

Garmin GNS 430 GPS 2

S-TEC Fifty Five Autopilot

Garmin GTX 330 Transponder

Description see below

Center Console [Shift-4]



Panel key assignments

- Shift + 2 Radio Stack
- Shift + 3 GPS Window
- Shift + 4 Center Console
- Shift + 5 Engine Controls

The Virtual Cockpit



All gauges and switches are exactly the same as in the 2D panel. Additionally there is a clickable parking brake handle.

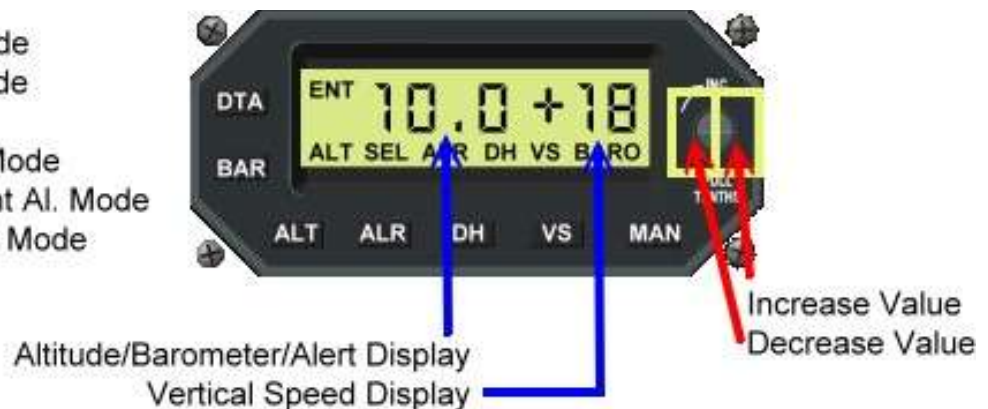
ARNAV GPS



The ARNAV GPS is inherited from the default FS2004 Garmin GPS so all buttons and their functions are the same as in the FS2004 default GPS500 unit and are described in the help section of the simulator. Please refer to this section for information on the functions.

Meggitt/S-TEC Altitude Selector/Alerter

- [DTA] Data Entry Mode
- [BAR] Barometer Mode
- [ALT] Altitude Mode
- [ALR] Altitude Alert Mode
- [DH] Decision Height Al. Mode
- [VS] Vertical Speed Mode



Self Test

When power is applied the Altitude Selector performs an internal self test. During the test all display elements are shown. On completion of the test the alerter audio tone (a two tone „ding dong“) is played and the Altitude Selector enters the Barometer Mode in Data Entry Mode.

Barometer Mode [BAR]

Initially the pressure is displayed in inches of mercury (in Hg).

Repeated pushes of the baro button will cause the displayed baro units to alternate between displaying the setting in inches of mercury (in Hg) or millibars. When baro is displayed in millibars, the first two digits are omitted: 1013.2 would display as 13.2 and 1036.9 would show as 36.9.

Data Entry Mode [DTA]

To change a value (except VS), the Altitude Selector has to be switched to the Data Entry Mode. The Data Entry Mode can be switched on and off by clicking the [DTA] Button.

It's state is indicated by „ENT“ (=on) in the upper left corner of the display.

The original Meggitt/S-TEC Altitude Selector/Alerter does not process changes until the Data Entry Mode is switched off. This gauge processes changes immediately.

Values can be changed by clicking the left (decrease) and right (increase) half of the knob.

Altitude Alert Mode [ALR]

The Altitude Alert Mode switch enables the altitude alert system in conjunction with the selected altitude displayed in ALT Mode.

Activation of the ALR switch will display "ALR" indicating arming of the alert mode. The alert mode will cause a chime throughout the cabin audio system when the aircraft is 1000 ft. from the selected altitude and again at 300 ft. from the selected altitude.

The alert function can be alternately enabled and disabled by pushing the ALR switch. When alert is enabled, the "ALR" annunciation will be visible on the display.

Decision Height Alert Mode [DH]

The Decision Height (DH) Alert Mode will provide altitude alerting at the set DH altitude by activation of the chime. The chime will sound entering and leaving a 100 ft. Window at the DH.

To set, select DH Mode. The display will initially show 0.0. Rotate the selector knob to obtain the desired DH to the nearest 100 ft. above the specified decision height. For instance, for a DH of 1160 ft., set in 1.2 (x1000) for 1200 ft.

At the set DH window, the DH alert will activate. In our example, the alert will sound at 1250 ft. and again at 1150 ft., alerting the pilot that he is at or near the set decision height. The DH Mode can be disabled by pushing the DH switch causing the DH annunciator to extinguish and returning to the previous display.

Repeated activation of the DH button in operate mode will alternately enable or disable the DH mode.

To change the decision height it is necessary to switch off the DH Mode and then switch it on again.

REMARKS:

Description partly adopted from the original Meggitt Avionics/S-TEC Pilot's Operating Handbook.

Garmin GMA340 Audio Panel

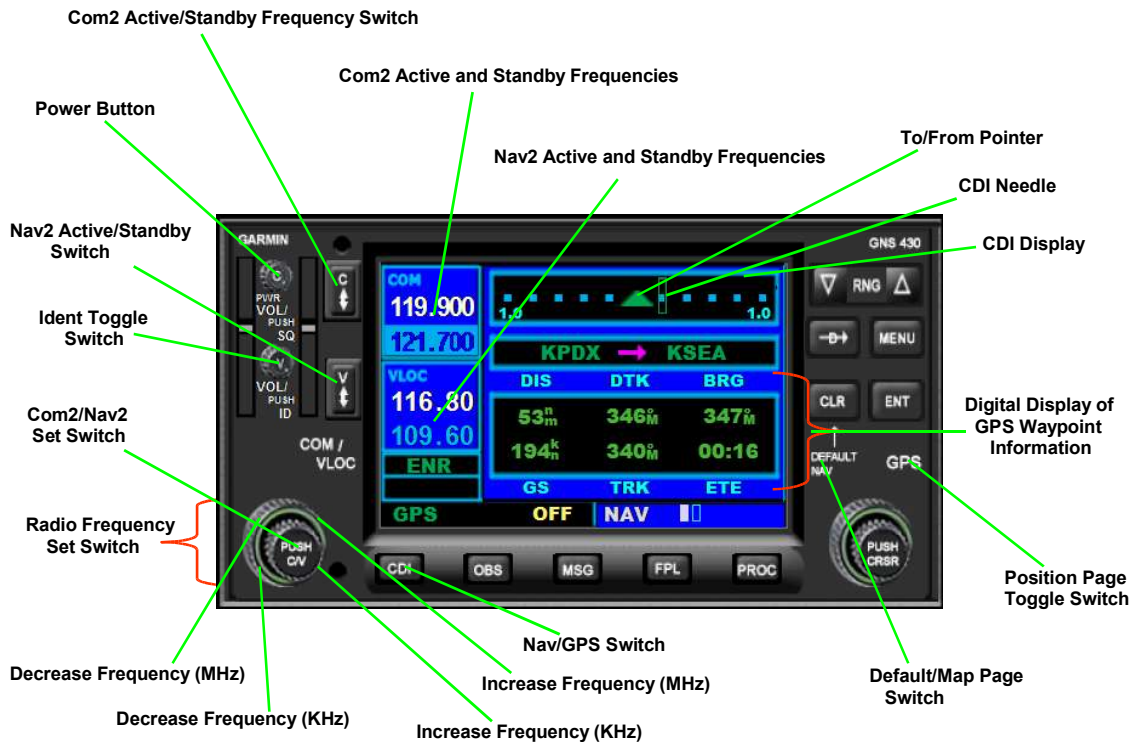


- | | |
|--|--|
| 1 Marker Beacon Lamps | 8 Select/Mute DME Aircraft Radio Audio |
| 2 Select/Mute Marker Beacon Receiver Audio | 9 Select/Mute ADF Aircraft Radio Audio |
| 3 Select COM1 Transceiver | 10 Marker Beacon Test Button |
| 4 Select COM2 Transceiver | |
| 5 Receive Both COM Transceivers | |
| 6 Select/Mute NAV1 Aircraft Radio Audio | |
| 7 Select/Mute NAV2 Aircraft Radio Audio | |

Clicking the test button switches sequentially through the marker beacon modes (A, O, M, off) and illuminates the marker beacon lamps and plays the appropriate sounds. All other switches can be clicked and show their states but they have no functions because they are not supported by Flight Simulator.

Garmin GNS430 GPS Radios (by Don Kuhn)

GNS430 Default Map Page



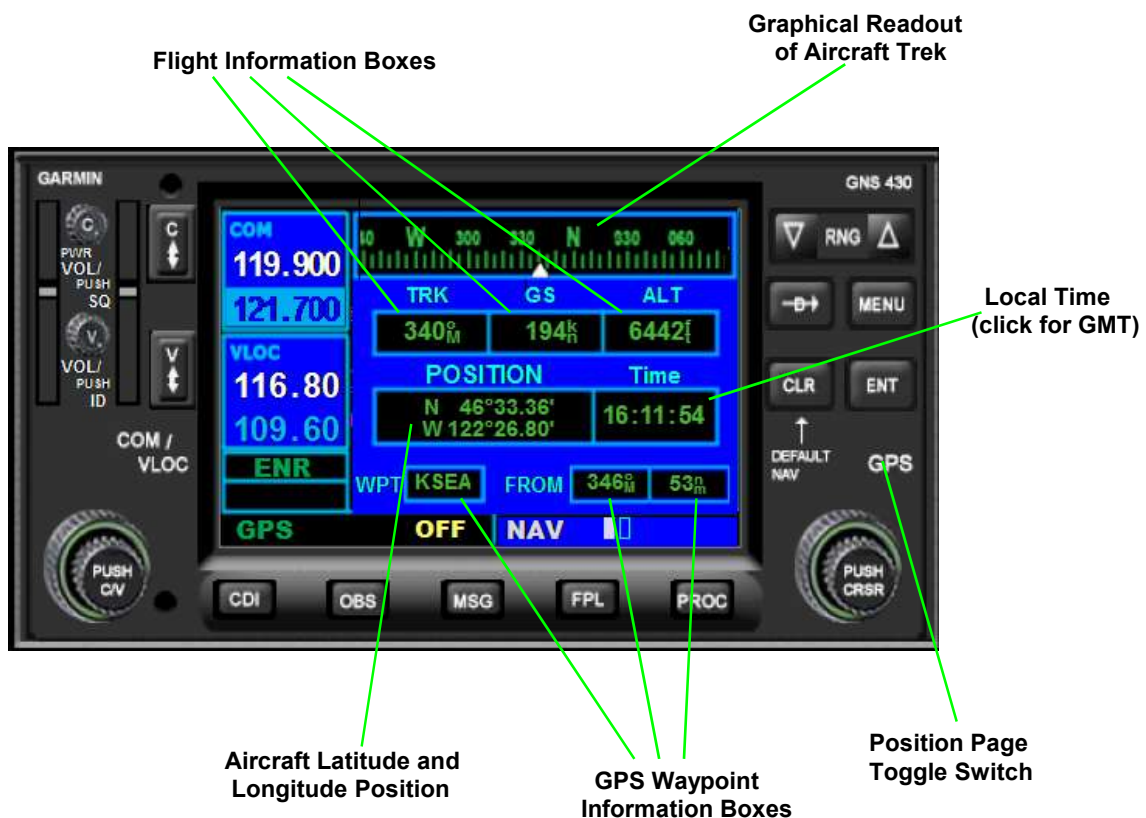
1. The power button turns the unit on and off.
2. The top number in each radio box corresponds to the active frequency, the bottom number corresponds to the standby frequency.
3. The active/standby switches toggle the active frequency to standby and the standby frequency to active.
4. The radio frequency set switch is used to tune the radios. The click areas are shown in the figure above.
5. The Com2/Nav2 set toggle switch is used to toggle between tuning the Com and Nav radios.
6. The CDI switch (Nav/GPS switch) toggles between GPS and Nav1 navigation modes.
7. The map page bar switch displays a moving map and various flight information in a boxed rectangle along the right side of the screen. See the accompanying file “430 Nav Map Page”.
8. Clicking on the GPS icon will bring up the position page which contains information boxes displaying information relating to the position of the aircraft and its relative position to the next waypoint. A clock displays local or Greenwich mean time. See the accompanying file “430 Nav Pos Page”.
9. The digital display of GPS waypoint information shows values only for GPS waypoints (excluding TRK and GS). If no waypoint is set in the GPS, the readout will display ----.

The values will be displayed whether in the Nav1 or GPS navigation mode.

10. The CDI at the top of the page shows course deviation information in either Nav1 or GPS navigation modes. In the Nav1 mode, the CDI works exactly like the standard CDI display found on most aircraft. The deflection distance of the CDI needle corresponds to ~1 mile on each side of the desired track in the Nav1 mode. It corresponds to a 5 mile distance on each side when tracking a waypoint in the GPS mode.

11. All other buttons and their functions are the same as in the FS2004 default GPS500 unit and are described in the help section of the simulator. Please refer to this section for information on the functions.

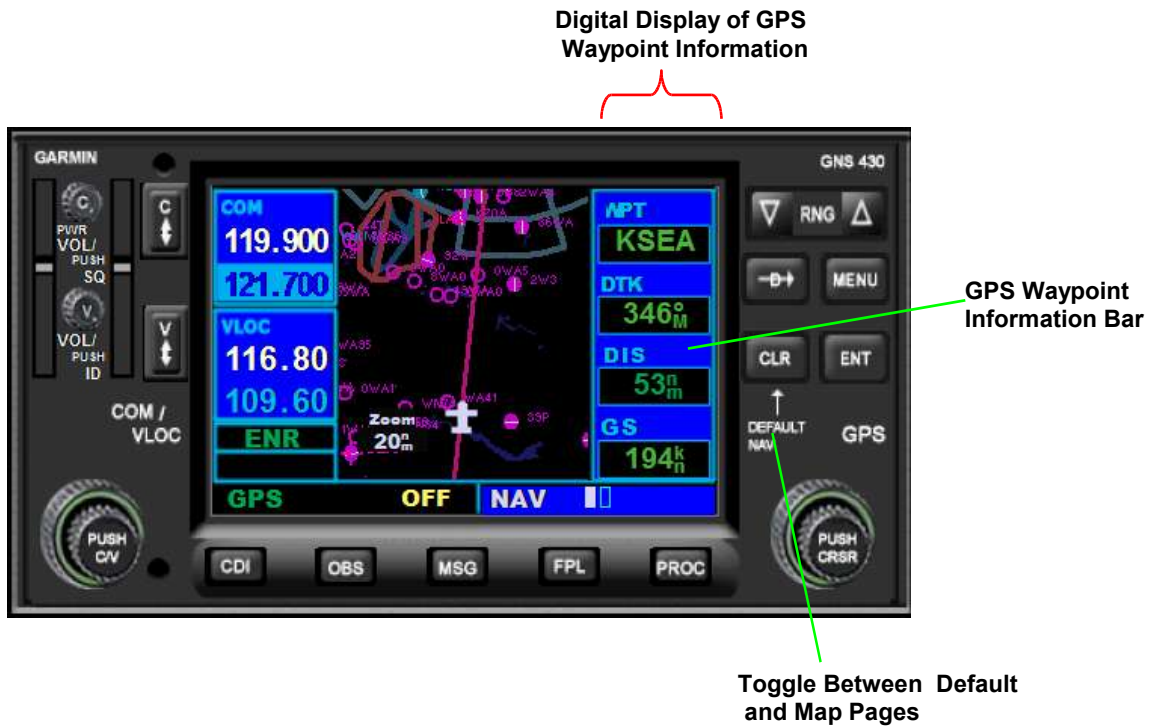
GNS430 Pos Page



1. Flight information boxes contain information relating to the aircraft position in the real world.
2. Trek graphical readout is self-explanatory. Shows the same information given in the TRK box as a sliding scale representation.
3. The position box lists the latitude and longitude of the aircraft.
4. Local or mean time listed, default is local time.
5. The waypoint boxes contain information relating to the aircraft position relative to the next GPS waypoint identified.
6. The position page is toggled on or off by clicking on the GPS logo as shown.

7. The position page can be toggled directly from the default Nav or Map pages
8. The default Nav and Map pages cannot be toggled on directly from the position page. You must exit the position page before toggling between these 2 pages (re-click on GPS).

GNS430 NAV Map Page



1. Clicking on the “DEFAULT NAV” logo toggles the Map page on or off.
2. The information bar lists the aircraft ground speed, and the distance and direction (magnetic) of the GPS waypoint identified in the WPT box.
3. The Nav bar is only available on the map pages.
4. The Map page is only available from the default Nav page. It is not available directly from the position page.

Meggitt/S-TEC Fifty Five Autopilot



Self Test

When power is applied the Autopilot performs an internal self test. During the test all display elements are shown. On completion of the test the RDY symbol is displayed.

Operation

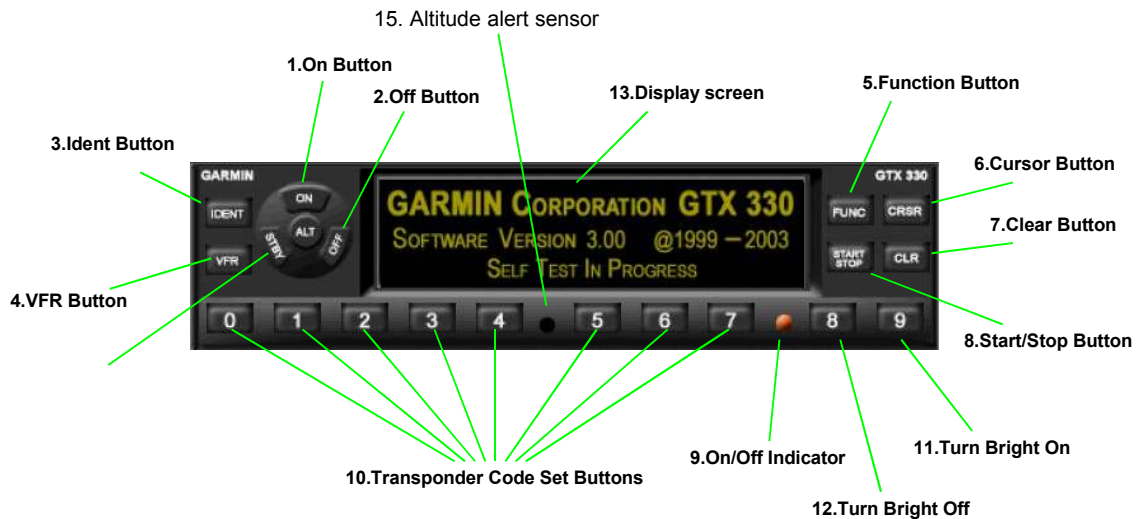
After self test the autopilot is ready and can be used immediately by pressing one of the buttons.

Clicking the NAV button once sets the autopilot to Nav 1 mode. Clicking a second time sets the GPS mode which is indicated by the GPSS Symbol. Clicking a third time turns off NAV AP.

The autopilot can be switched on and off by clicking the Autopilot Master Switch spot on top of the stick (see 2D Panel).

Garmin GTX330 Transponder (by Don Kuhn)

GTX 330 Self-Test Page



1. turns transponder on.
2. turns transponder off.
3. sends a special position identification pulse for 18 seconds for ATC identification (in real life). Toggles an IDENT display for 18 seconds in FS9. See GTX 330 PrAlt.
4. toggles and sets the transponder code to 1200 directly.
5. toggles between the different display screens.
6. cursor button is used to cancel manual setting of the transponder code at any time in the setting process.
7. clear button is used to reset the flight and count up timers. Also used to go back when setting the transponder code.
8. starts and stops the count up timer. Also starts and stops the altitude monitor.
9. lights up when transponder is on.
10. numbers for setting the transponder code manually.
11. brightens transponder background.
12. unbrightens transponder background.
13. display screen.
14. stops the transponder from replying to any interrogations.
15. altitude alert sensor is on when indicated altitude is \leq or \geq 5 feet from set altitude.

Manual Tuning Instructions



Transponder code set number buttons

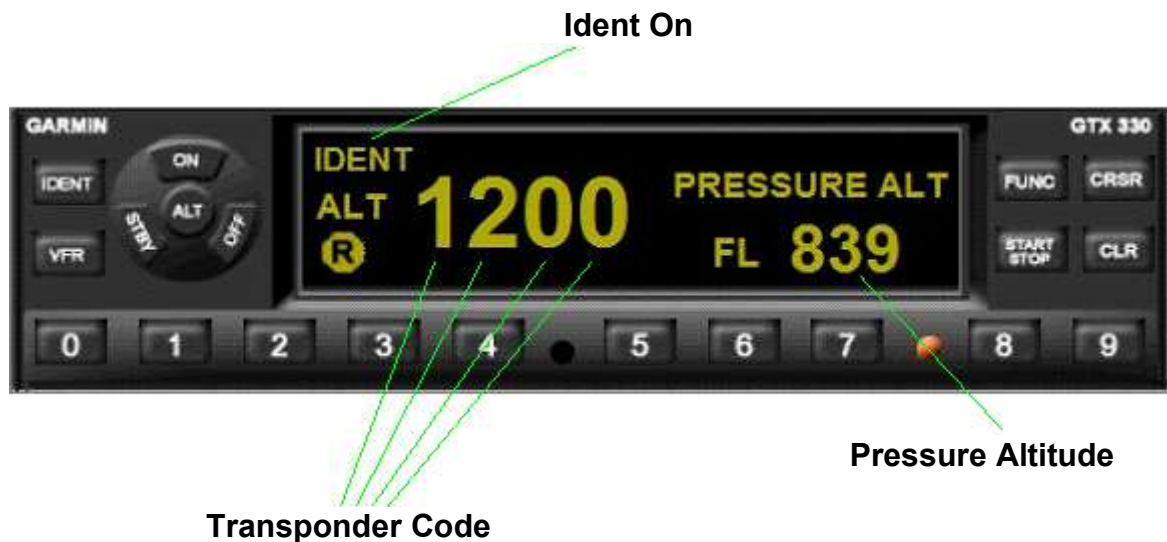
1. first click on any number button between 0 and 7.
This will set that number into the thousand position (first button on the left) and a rectangle will appear behind the second, or hundreds, button. (note: the rectangle is positioned over the number that is to be set.)
2. click again on a number button and that number will be entered into the second, or hundreds, location. The rectangle will move over to the third, or tenths, number.
3. click again on a number button and that number will be entered into the third, or tens, location. The rectangle will move over to the fourth, or ones, number.
4. click again on a number button and that number will be entered into the fourth location. The rectangle will disappear and the new code will be entered into the transponder. (note: the new code will not be entered until the fourth number is clicked.)
5. the number to be set will be shown in the rectangle, and both can be moved backwards by clicking on the CLR button. Going completely back using the CLR button will return the transponder to the previous code.
6. clicking on the CRSR button at any time during the code setting will cancel the setting and return the transponder to the previous code.
7. note that the VFR frequency 1200 can be set directly by clicking on the VFR button.

GTX 330 Flight Time Display



1. flight time format is HH:MM:SS.
2. begins when aircraft lifts off, and pauses (or stops) when aircraft touches down.
3. toggled visible with the function button.

GTX 330 Press Altitude Page



1. IDENT display lights up for 18 seconds when the ident button is clicked.
2. pressure altitude is given in feet.
3. default display and is toggled visible with the function button.

GTX 330 Altitude Monitor Display



1. monitors altitude and displays the number of feet above or below the set altitude.
2. displays the word "ABOVE" or "BELOW" depending on the aircraft altitude relative to that set.
3. toggled visible with the function button.
4. toggled off and on with the start/stop button.
5. sensor light is lit when the indicated altitude is exceeded by +/- 5 feet.

GTX 330 Density Altitude Display



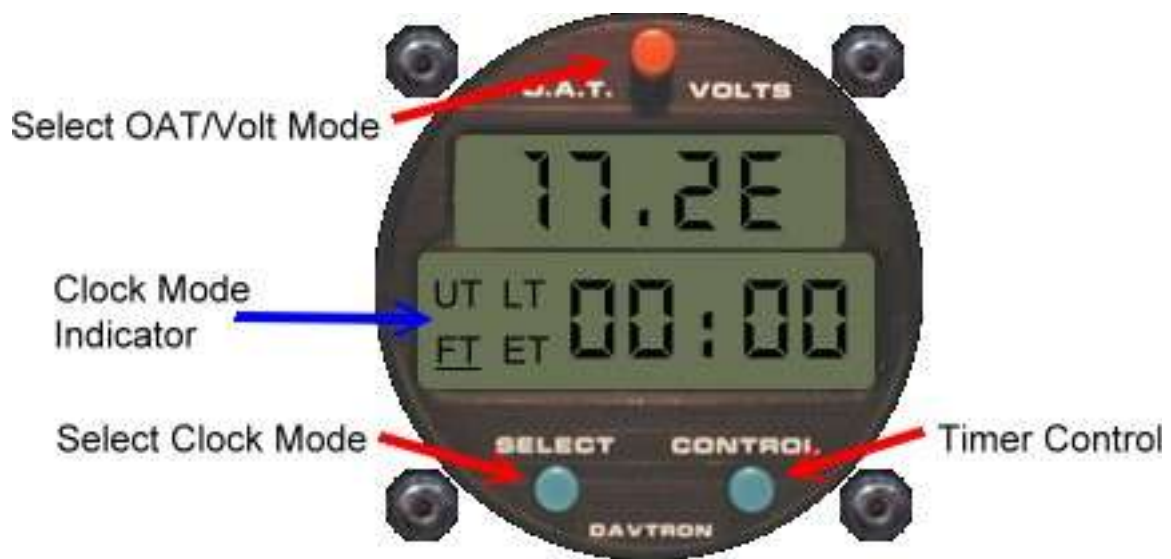
1. displays outside ambient temperature in degrees Celsius.
2. displays density altitude in feet.
3. toggled visible with the function button.

GTX 330 Count Up Timer Display



1. count time format is HH:MM:SS.
2. start/stop and reset (clr) buttons are self-explanatory.
3. toggled visible with the function button.

Davtron M803 Digital Clock



The upper display can be switched to Voltage, O.A.T Fahrenheit and O.A.T Centigrade. The actual mode is indicated by a letter behind the value.

E indicates Voltage

F indicates O.A.T Fahrenheit

C indicates O.A.T Centigrade

On power up the Voltage mode is selected.

The lower display shows time information and can be switched to UT, local time, flight time and elapsed time.

The selected mode is indicated in the left part of the clock display.

UT indicates „Universal Time“, also known as GMT (Greenwich Mean Time)

LT indicates local time

FT indicates flight time

ET indicates elapsed time

The Timer Control Button starts and resets the timer in ET mode.

The CAPS System

The CAPS (Cirrus Airframe Parachute System) can be activated using the „Spoiler“ key. In the default key assignment table it is the [#] - key.



After deploying the parachute the aircraft will descent slowly and we hope that you will reach the earth's surface without any injuries.

The Pilot

The pilot figure can be removed using the „Tailhook“ key. In the default key assignment table it is the [Ctrl-W] - key.

Checklist

Before Starting Engine

Seat Belts	FASTENED
Parking Brakes	SET
Power Lever	FULL BACK
Magneto/Starter Switch	OFF
Bat-Alt Master Switches	OFF
Avionics Master Switch	OFF
Fuel Boost Pump Switch	OFF
Mixture	CUTOFF

Starting Engine

Brakes	HOLD
Bat-Alt Master Switches	ON (Check Volts)
Fuel Selector	FULLEST TANK
Fuel Quantity	CHECK
Mixture	FULL RICH
Power Lever	FULL FORWARD
Boost Pump	PRIME (2-4 seconds), then BOOST
Propeller Area	CLEAR
Power Lever	OPEN ¼ INCH
Ignition Switch	START (Release after engine starts)
Power Lever	RETARD (to maintain 1000 RPM)
Oil Pressure	CHECK
Avionics Power Switch	ON
Engine Parameters	MONITOR
Ammeter	CHECK
Transponder	STBY

Before Taxiing

Brakes	CHECK
Flaps	UP (0%)
Radios/Avionics	AS REQUIRED
Cabin Heat/Defrost	AS REQUIRED

Taxiing

Directional Gyro/HSI Orientation	CHECK
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Before Takeoff

Brakes	HOLD
Flight Controls	FREE & CORRECT
Trim	SET Takeoff
Flaps	SET 50% & CHECK
Flight and Engine Instruments	CHECK
Directional Gyro, Altimeter	CHECK & SET
Fuel Quantity	CONFIRM
Fuel Selector	FULLEST TANK
Propeller	CHECK
a. Power Lever	INCREASE to detent
b. Note RPM rises to approximately 2000 RPM then drops by approximately 100 RPM as Power Lever is set in detent.	
c. Power Lever	1700 RPM
Alternator	CHECK
a. Landing Light	ON (3-5 seconds)

b. Note ammeter remains within the needle width.

Voltage	CHECK
Power Lever	DECREASE to 1000 RPM
Transponder	ALT
Navigation Radios/GPS	SET for Takeoff
Pitot Heat	ON, AS REQUIRED

Normal Takeoff

Power Lever	FULL FORWARD
Engine Instruments	CHECK
Brakes	RELEASE (Steer with Rudder Only)
Elevator Control	Rotate Smoothly at 65-70 KIAS
At 80 KIAS, Flaps	UP

Short Field Takeoff

Brakes	HOLD
Power Lever	FULL FORWARD
Engine Instruments	CHECK
Brakes	RELEASE (Steer with Rudder Only)
Elevator Control	Rotate Smoothly at 65 KIAS
Airspeed at Obstacle	75 KIAS
At 80 KIAS, Flaps	UP

Climb

Climb Power	SET
Mixture	FULL RICH
Engine Instruments	CHECK
Boost Pump	OFF

Cruise

Cruise Power	SET
Engine Instruments	MONITOR
Fuel Flow and Balance	MONITOR
Mixture	LEAN as required

Descent

Altimeter	SET
Cabin Heat/Defrost	AS REQUIRED
Fuel System	CHECK
Mixture	FULL RICH
Flaps	AS REQUIRED
Brake Pressure	CHECK

Before Landing

Mixture	FULL RICH
Flaps	AS REQUIRED
Landing Light	AS REQUIRED
Autopilot	DISENGAGE

Landing

Landing Speed	80 KIAS
Touchdown	MAIN WHEELS FIRST
Landing Roll	LOWER NOSE WHEEL
Brakes	MINIMUM REQUIRED

After Landing

Flaps	UP
Power Lever	1000 RPM
Transponder	STBY
Pitot Heat	OFF

Shutdown

Avionics Switch	OFF
Mixture	CUTOFF
Magneto/Starter Switch	OFF
Bat-Alt Master Switches	OFF
Parking Brake	SET
Throttle	FULL BACK
Nav Lights	OFF
Fuel Boost Pump Switch	OFF
Fuel Selector	OFF
Panel Lights	OFF

Securing Aircraft

Parking Brake	VERIFY SET
Throttle	VERIFY IDLE
All Switches	VERIFY OFF

Reference Guide

Airspeed Limitations

Speed	KIAS	KCAS	Remarks
V _{NE}	200	201	Never Exceed Speed is the speed limit that may not be exceeded at any time.
V _{NO}	165	165	Maximum Structural Cruising Speed is the speed that should not be exceeded except in smooth air, and then only with caution.
V _O 2900 Lb 2600 Lb 2200 Lb	135 126 116	135 126 116	Operating Maneuvering Speed is the maximum speed at which full control travel may be used. Below this speed the airplane stalls before limit loads are reached. Above this speed, full control movements can damage the airplane.
V _{FE} 50% Flaps 100% Flaps	120 100	120 101	Maximum Flap Extended Speed is the highest speed permissible with wing flaps extended.
V _{PD}	135	135	Maximum Demonstrated Parachute Deployment Speed is the maximum speed at which parachute deployment

General Limitations

Weight Limits

Maximum Takeoff Weight	2900 lb (1315 kg)
Maximum Weight in Baggage Compartment	130 lb (59 kg)

Maximum Operating Altitude

Maximum Operating Altitude	17,500 ft MSL
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Airspeeds for Normal Operation

Takeoff Rotation:

• Normal, Flaps 50%	70 KIAS
• Short Field, Flaps 50%	65 KIAS
• Obstacle Clearance, Flaps 50%	75 KIAS

Enroute Climb, Flaps Up:

• Normal, SL	100 KIAS
• Normal, 10,000'	90 KIAS
• Best Rate of Climb, SL	94 KIAS
• Best Rate of Climb, 10,000'	89 KIAS
• Best Angle of Climb, SL	81 KIAS
• Best Angle of Climb, 10,000'	83 KIAS

Landing Approach:

- Normal Approach, Flaps Up 85 KIAS
- Normal Approach, Flaps 50% 80 KIAS
- Normal Approach, Flaps 100% 75 KIAS
- Short Field, Flaps 100% 75 KIAS

Go-Around, Flaps 50%:

- Full Power 75 KIAS

Maximum Recommended Turbulent Air Penetration:

- 2900 Lb 135 KIAS
- 2600 Lb 126 KIAS
- 2200 Lb 116 KIAS

Maximum Demonstrated Crosswind Velocity:

- Takeoff or Landing 19 Knots

Credits

We want to thank Don Kuhn for the permission to distribute his excellent Garmin Avionics with our aircraft.

License Information

This product is freeware and may be freely distributed as long as no payment is requested.

It must not be sold single or as part of a collection without our permission.

It may only be uploaded to websites which are available without any cost.

It may only be distributed if the original zip file remains unchanged.

Mainz, Germany (EDFZ)

May 2005

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