ELECTRONIC PRIMARY FLIGHT DISPLAY

NAVIGATION DISPLAY

G500

This supplement includes the information to be provided to the pilot, as required by the certification basis. The limitations and information contained herein either supplement or, in the case of conflict, override those in the flight manual.

Applicability

Aircraft type and model		Manufacturer change
TC EASA.A.367 (DR 300 DR 400)	DR 340, DR 315, DR 360, DR 380 DR 300/108, DR 300/180R, DR 300/140 DR 300/125 DR 400/125, DR 400/140, DR 400/160, DR 400/180, DR 400/180R, DR 400/2+2 DR 300/120 DR 400/120, DR 400/125i, DR 400/140B DR 400/120A, DR 400/160D, DR 400/120D, DR 400/180S, DR 400/100, DR 400RP, DR 400 NGL, DR 400/200R, DR 400/500, DR 400/140B with STC EASA 10014219	DET n° 120304

Approval

Amendment	Description	Date	Approval
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Section 1. GENERAL

1.1 GARMIN G500 PRIMARY FLIGHT / MULTI-FUNCTION DISPLAY SYSTEM

A G500 PFD/MFD System consists of a Primary Flight Display (PFD) and Multi-Function Display (MFD) housed in a single Garmin Display Unit (GDU), plus an Air Data Computer (ADC) and Attitude and Heading Reference System (AHRS). The G500 interfaces with other installed systems in the aircraft, including Garmin GTN series GPS/WAAS navigators, Garmin SL30 or GNC255 VHF navigators, and various audio panels, traffic systems and ADF navigators.

The primary function of the PFD is to provide attitude, heading, air data and navigation information (from GNS units) to the pilot. The PFD may optionally display Synthetic Vision Technology (SVT). The primary function of the MFD is to provide advisory mapping, terrain, and flight plan information.

The standby instruments (altimeter, airspeed, attitude, and magnetic compass) are completely independent from the PFD and will continue to operate in the event the PFD is not usable.

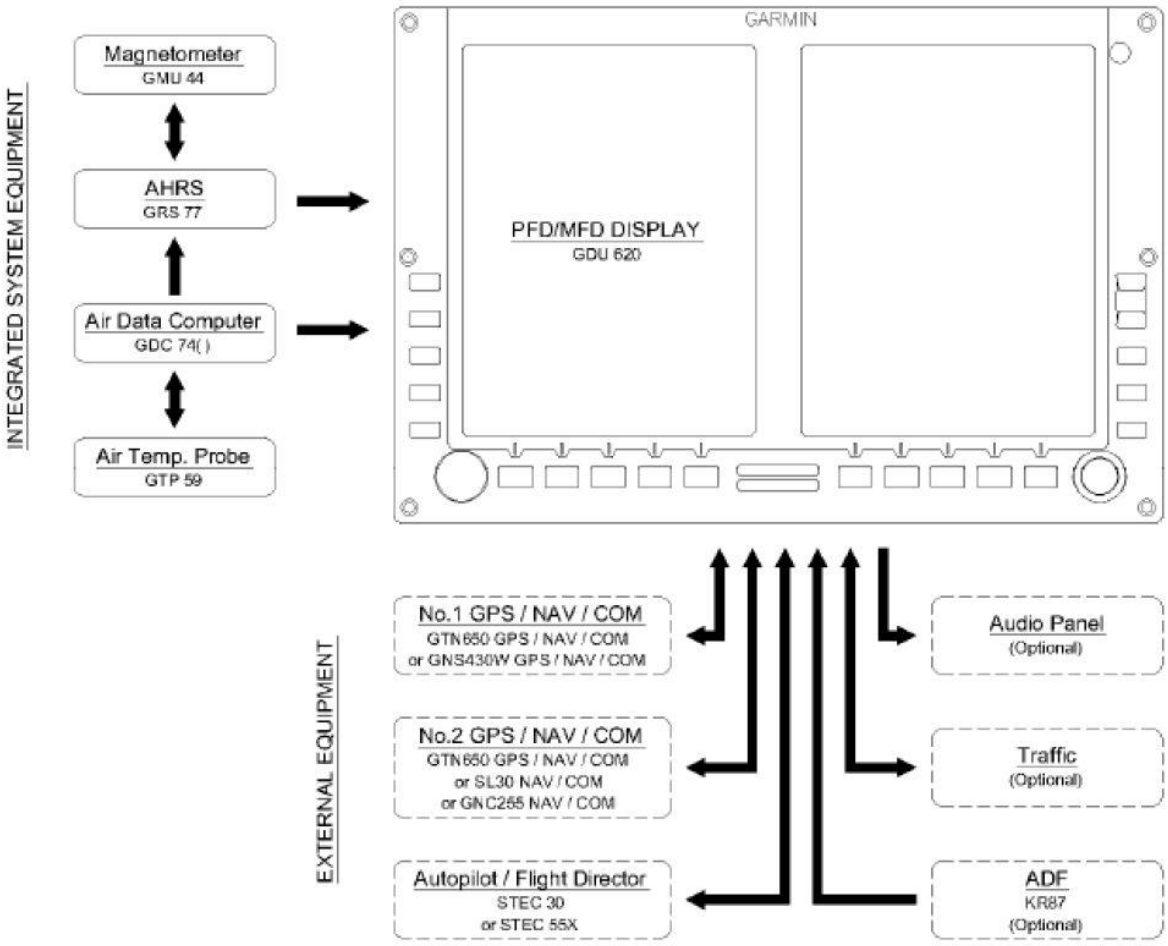


Table 1. G500 PFD Operational block diagram.

1.2 AIRCRAFT OPTIONS.

The following table defines the options that are included in this aircraft as part of the G500 installation:

Option	Enabled (√)	AFMS ref.
Synthetic Vision		Para 7.3
Electric Standby horizon with back-up battery		Para's 3.4 & 4.1
Chartview		Para's 2.7 &7.14
TAWS-B		Para 7.4

Section 2. LIMITATIONS

2.1 SYSTEM SOFTWARE REQUIREMENTS

The G500 must utilize the following FAA and EASA approved software versions:

Component	Description	Software Version
G500 GDU620	PFD/MFD	5.02
GRS77	AHRS	3.02
GDC74	Air data computer	3.08
GMU44	Magnetometer	2.01

In addition to the main components of the G500, at least one Garmin GPS/WAAS navigator must be interfaced to the G500. GPS/WAAS systems connected to the G500 must utilize the following or later FAA approved software versions:

Component	Identification	Software Version
GTN650 series	GPS/WAAS Nav	2.0, or later

2.2 AHRS OPERATIONAL AREA

The AHRS used in the G500 is limited in its operational area: IFR Operations are prohibited north of 70°N and south of 70°S latitudes. In addition, IFR operations are prohibited in the following two regions: 1) north of 65°N between 75°W and 120°W longitude and 2) south of 55°S between 120°E and 165°E longitude. Loss of the G500 heading and attitude may occur near the poles, but this will not affect the GPS track or standby attitude indicator.

2.3 STANDBY INSTRUMENTS.

A serviceable standby attitude indicator, airspeed indicator and altimeter are required.
The Standby Attitude Gyro will operate via the aircraft vacuum system and will continue to provide valid attitude information even if all aircraft electrical power is lost.
Where the optional MidContinent electric attitude indicator is installed as the standby instrument, the internal back-up battery will provide up to 60 minutes of power to the standby indicator.

2.4 SYNTHETIC VISION TECHNOLOGY

The use of the synthetic vision display elements alone for aircraft control without reference to the G500 primary flight instruments or the aircraft standby instruments is prohibited.

The use of the synthetic vision display alone for navigation, or obstacle, terrain, or traffic avoidance is prohibited.

The terrain alerting function of SVT has not been shown to be compliant with a TAWS minimum performance standard and as such the alerts may not provide the same integrity of alert as would be generated from a TAWS system. Where the optional TAWS-B function is activated, the SVT terrain alert function is suppressed.

2.5 PILOT'S GUIDE.

The Garmin G500 pilot's guide P/N 190-01102-02, Revision D or later appropriate revision, must be carried on board the aircraft and be immediately available to the flight crew.

Garmin also provides a G500 Cockpit Reference Guide (190-01102-03) Rev. D or later appropriate revision. This reference material is not required to be on board the aircraft but does contain more detailed description and operation of the system.

2.6 KINDS OF OPERATIONS

G500 equipment installed in an appropriately certified aircraft is approved for Day and Night / VFR and IFR operations when appropriately maintained.

Equipment	Number required	
	VFR	IFR
GDU620 Primary flight display/Navigation display		1
GTN650	-	1
GRS77 Attitude/Heading unit (AHRS)	-	1
GDC74A Air data computer (ADC)		1
GMU44 Magnetometer (GMU)	-	1
Standby attitude indicator	-	1
Standby airspeed indicator	1a	1
Standby altimeter	1a	1
Standby Nav CDI	-	1
Magnetic compass	1	1

For VFR operations, the aircraft must have one source of altitude and airspeed information. This may be from either the PFD or the standby instruments. (i.e. all "1a" items from the table above).

Note: Where National regulations or specific airspace regulations require other instruments to be installed in addition to the above, the National rules or airspace regulations must be observed.

2.7 CHARTVIEW.

The Charts displayed on the MFD are for improved situational awareness only and must not be used for navigation. Operation of the Chartview function does not relieve the pilot of the obligation to carry the correct current paper charts for the required route.

2.8 TAWS-B

Navigation must not be predicated upon the use of the TAWS display.

To avoid unwanted alerts, TAWS should be inhibited when landing at an airport that is not included in the airport database by operating the TAWS inhibit function on the MFD.

Section 3. EMERGENCY and ABNORMAL PROCEDURES

3.1 EMERGENCY PROCEDURES

No change.

3.2 ABNORMAL PROCEDURES

These procedures supersede those presented as markings or placards, or documented in the aircraft's EASA approved Airplane Flight Manual as a result of the installation of the G500 PFD/MFD system. All other emergency procedures remain in effect.

3.2.1. Loss of primary flight instrument data. If primary flight information (Attitude, Heading, Altitude or Airspeed) on the PFD is not available or appears invalid, utilize the standby instruments installed around and adjacent to the G500 as required.

3.2.2. Invalid Nav data. If navigation information on the PFD/MFD (HSI, RMI, WPT bearing and distance information, or Moving Map Data) is not available or appears invalid, select an alternate data source (via 1-2 key) or utilize the data directly from the navigation equipment as required.

3.2.3. Invalid GPS data. If GPS position information from the GTN650 is not valid due to an inability to track GPS, the own-ship icon on the MFD is removed and "NO GPS POSITION" text is overlaid on the MFD moving map. The system will annunciate a loss of integrity, "LOI" on the HSI. The LOI annunciation will be coloured yellow and the HSI needle will flag.
The pilot should use VHF Nav radios for primary navigation. Pressing the CDI soft key will change the HSI navigation source. If GPS navigation is subsequently restored, the MFD moving map will display the own-ship icon, and the HSI navigation source can be selected to GPS; at that time the "LOI" annunciation will be removed.

3.2.4. SVT Terrain discrepancies. If during the course of normal operations there is any discrepancy between actual terrain around the aircraft and terrain shown on the SVT display, the display of synthetic vision should be manually turned off using the procedure detailed in section 7.3 below.

3.2.5. G500 TAWS installation failures. If the GDU becomes inoperative TAWS visual warnings will not be provided. TAWS audio alerts may still be available directly from the GTN along with the GTN display of TAWS.

3.3 ABNORMAL INDICATIONS

3.3.1. Heading Failure

A magnetometer failure is indicated by a HDG with a red X to the left of the heading display. Where the GDU620 is still receiving valid GPS date, the heading will be replaced with GPS ground track displayed in magenta. The aircraft can be flown with reference to GPS ground track instead of heading. In this case, the autopilot will continue to operate in HDG and NAV modes but the heading and course deviations being sent to the autopilot will be based on GPS ground track instead of magnetic heading.

A complete heading failure (loss of both magnetometer and GPS ground track) is indicated by the digital heading presentation being replaced with a red X and the compass rose digits being removed. The course pointer will indicate straight up and operate much like a traditional CDI with the Omni-Bearing Selector being adjusted by the PFD knob set to CRS. Under this

condition, the pilot must use an alternate source of heading such as the standby compass. The pilot must disconnect the autopilot HDG mode.

3.3.2. AHRS Failure

A failure of the Attitude and Heading Reference System (AHRS) is indicated by a removal of the sky/ground presentation, and a red X and a yellow “AHRS FAILURE” shown on the PFD. A heading failure will be accompanied with attitude failure as described above in 3.3.1. Rate of turn information will not be available.

1. Use Standby Attitude Indicator and standby compass
2. Set course datum using CRS selection of the PFD knob
3. Seek VFR conditions or land as soon as practical.

The Attitude and Heading Reference System integrity monitoring features require the availability of GPS and Air Data. Although the attitude will remain valid if one of these systems becomes inoperative, IFR flight is not authorized unless both integrity systems are fully operational. The G500 monitors these integrity systems automatically and will alert the pilot when the AHRS is not receiving GPS or Air Data. Note: In dual GPS installations, only one GPS needs to be available for IFR use.

3.3.3 Air Data Computer (ADC) Failure

Complete loss of the Air Data Computer is indicated by a red X and yellow text over the airspeed, altimeter, vertical speed, TAS and OAT displays. Some derived functions, such as true airspeed and wind calculations, will also be lost. If valid GPS data is available, the PFD will automatically revert to display GPS calculated attitude relative to mean sea level. This GPS altitude is displayed above the altitude tape.

1. Use Standby Airspeed Indicator and Altimeter
2. Seek VFR conditions or land as soon as practical

CAUTION: Do not rely on GPS altitude for terrain clearance.

3.4 LOSS OF ELECTRICAL POWER

Refer to the emergency procedures section of the aircraft flight manual for load-shedding procedures in the event of a generator failure. All non-essential equipment should be turned off to preserve battery power for essential equipment.

In the event of a total loss of electrical power, the G500 system will cease to operate and the pilot must utilize the standby instruments to fly the aircraft. For installations utilizing the 3” electric attitude gyro with internal standby battery or 2” standby horizon with remote battery and controller, the amber standby power light will start flashing. Within one minute, press the “STBY PWR” button to ensure the standby gyro continues to operate via its emergency battery. If the red warning flag is in view, the gyro is inoperative and must not be used.

Note: The electric attitude gyro battery capacity may vary considerably depending on temperature, charge status, and battery life condition. Low temperatures below 32°F/0°C will temporarily degrade battery capacity. Internal chemistry will slowly degrade battery capacity over several years of operation even when correctly maintained.
A poorly maintained battery will suffer accelerated degradation. Extended storage in a discharged state and over-charging will permanently damage the battery.

3.5 WARNINGS, CAUTIONS, AND ADVISORIES

The following tables show the colour and significance of the warning, caution, and advisory messages which may appear on the G500 displays.

NOTE

The G500 Cockpit Reference Guide and the G500 Pilot's Guide contain detailed descriptions of the annunciator system and all warnings, cautions and advisories.

Warning annunciations – Red		
Annunciation	*Pilot Action*	*Cause*
ATTITUDE FAIL	Use Standby Attitude.	Display system is not receiving attitude reference information from the AHRS; accompanied by the removal of sky/ground presentation and a red X over the attitude area.
AIRSPEED FAIL	Use Standby Airspeed.	Display system is not receiving airspeed input from the air data computer; accompanied by a red X through the airspeed display.
ALTITUDE FAIL	Use Standby Altitude.	Display system is not receiving altitude input from the air data computer; accompanied by a red X through the altimeter display.
VERT SPD FAIL	Cross check instruments.	Display system is not receiving vertical speed input from the air data computer; accompanied by a red X through the vertical speed display.
HDG	Use Standby Magnetic Compass or GPS track information.	Display system is not receiving valid heading input from the AHRS; accompanied by a red X through the digital heading display.
Red X	Reference the data source or alternate equipment.	A red X through any display field, indicates that display field is not receiving data or is corrupted.

Caution annunciations – Yellow		
Annunciation	*Pilot Action*	*Cause*
AHRS Aligning – Keep Wings Level	Limit aircraft banking as AHRS Aligns - OK to taxi.	Attitude and Heading Reference System is aligning. Keep wings level using standby attitude indicator. AHRS will align even if you must bank, but the alignment time may be slightly longer if maneuvering.
NO GPS POSITION	If the system is configured with dual GPS, press the 1-2 button.	GPS data on the selected system is no longer valid. The Moving Map and associated data are not updating.
TRAFFIC	Visually acquire the traffic to see and avoid.	The configured traffic system has determined that nearby traffic may be a threat to the aircraft.
No Traffic Data	Use vigilance, as the traffic sensor is not able to detect traffic.	The configured traffic system is not able to detect traffic and / or provide the pilot with any traffic awareness.

Advisories – White	
Annunciation	*Pilot Action*
Various Alert Messages may appear under the MFD - ALERTS soft key.	View and understand all advisory messages. Typically, they indicate communication issues within the G600 System. Refer to the G600 Cockpit Reference for appropriate pilot or service action.

The G500 will display the terrain warnings, cautions, and availability status for TAWS when the TAWS-B function is activated in the associated GTN650. Consult the GTN650 AFMS for appropriate procedures.

Section 4. NORMAL PROCEDURES

4.1 MD4300-411 3" STANDBY ATTITUDE PRE-FLIGHT TEST

After engine start and with the generator/alternator operating, perform a standby battery test on the electric standby horizon (where installed):

1. Allow the unit to run for 3 minutes.
2. Press and hold the STBY PWR button on the standby horizon. The amber LED should start to flash to indicate the unit has entered test mode. The amber LED should flash continuously and either a Red or Green LED should be displayed below the word TEST.
3. Visually monitor the test lights until the amber light stops flashing to indicate the end of the test.
4. A green light throughout the test indicates a satisfactory battery. A red light at any time during the test indicates the standby battery requires at least a charge and possibly replacement. Observe section 2.6 above for operation without a serviceable standby attitude system.

4.2 TAWS AND SVT ALERTS

In the event of receiving a TAWS-B or Synthetic Vision System TERRAIN or OBSTACLE warning audio alert accompanied by the PFD display indicating areas of yellow or red terrain or obstacles, the pilot should immediately confirm his position relative to the terrain or obstacle threat and initiate appropriate recovery action. No recovery action must be taken solely on the basis of the terrain and obstacle display. Only vertical manoeuvres are recommended, unless visual meteorological conditions (VMC) exist or the pilot can determine that turning in addition to the climbing manoeuvre is the safest course of action.

Section 5. PERFORMANCE

No change.

Section 6. WEIGHT AND BALANCE

See current weight and balance data.

Section 7. SYSTEM DESCRIPTIONS

7.1 SYSTEM POWER SOURCES

The Garmin Display Unit (GDU), Attitude and Heading Reference System (AHRS), and Air Data Computer (ADC) are tied to the aircraft's main (essential) bus and energized when the aircraft master switch is turned on.

The major components of the G500 are circuit breaker protected with resettable type breaker available to the pilot. These breakers are located on/adjacent to the main bus circuit breaker panel and labelled as follows:

1. PFD - For Garmin Display Unit (PFD/MFD), GDU 620
2. AHRS - Attitude and Heading Reference System, GRS 77 with GMU44 magnetometer.
3. ADC - Air Data Computer, GDC 74A

7.2 NAVIGATION SOURCES

The G500 requires at least one Garmin GTN650 GPS/WAAS navigation unit to ensure the integrity of the Attitude and Heading Reference System. The G500 HSI can be selected to display course deviation information from up to four independent sources: two GPS, and two VHF NAV. In addition, the HSI can display two simultaneous bearing pointers sourced from GPS, VHF NAV, or ADF.

7.3 SYNTHETIC VISION TECHNOLOGY

SVT uses an internal terrain database and GPS location to present the pilot with a synthetic view of the terrain in front of the aircraft. The purpose of the SVT system is to assist the pilot in maintaining situational awareness with regard to the terrain and traffic surrounding the aircraft.
The SVT system may be turned on or off, as desired. To access the synthetic vision system soft-key menu, press the PFD soft-key on the GDU 620, followed by the SYN VIS soft-key. Synthetic vision terrain, horizon headings, and airport signs can be toggled on and off from this menu. Press the BACK soft-key to return to the root PFD menu.

SVT will provide a visual caution of potentially conflicting terrain by changing the colour of terrain on the PFD to YELLOW. Should the aircraft continue on track towards the terrain, the display with then change to RED. The YELLOW and RED terrain indications will be accompanied by audio warnings over the cockpit speaker and crew headphones. SVT alerts are suppressed if an optional TAWS-B function is activated.

The synthetic vision display of terrain uses several data sources to correctly display terrain (GPS, terrain database, attitude information, etc.). If any of these data sources become unreliable or unavailable, the display of synthetic terrain will automatically revert to the non-SVT PFD display of blue over brown.
Additionally, if during the course of normal operations there is any discrepancy between actual terrain around the aircraft and terrain shown on the SVT display, the display of synthetic vision should be manually turned off using the procedure detailed above.

A typical SVT display is shown below:

SVT provides additional features on the G500 primary flight display (PFD) which display the following information:

• **Synthetic Terrain**; an artificial, database derived, three dimensional view of the terrain ahead of the aircraft within a field of view of approximately 25 degrees left and 25 degrees right of the aircraft heading.

• **Obstacles**; obstacles such as towers, including buildings over 200 AGL that are within the depicted synthetic terrain field of view and within 1000 feet vertically of the aircraft.

• **Flight Path Marker (FPM)**; an indication of the current lateral and vertical path of the aircraft. The FPM is always displayed when synthetic terrain is selected for display.

• **Traffic**; a display on the PFD indicating the position of other aircraft detected by a traffic system interfaced to the G500 system.

• **Horizon Line**; a white line indicating the true horizon is always displayed on the SVT display.

• **Horizon Heading**; a pilot selectable display of heading marks displayed just above the horizon line on the PFD.

• **Airport Signs**; pilot selectable “signposts” displayed on the synthetic terrain display indicating the position of nearby airports that are in the G500 database.

• **Runway Highlight**; a highlighted presentation of the location and orientation of the runway(s) at the destination airport.

The synthetic terrain depiction displays an area approximating the view from the pilot's eye position when looking directly ahead out the windshield in front of the pilot. Terrain features outside this field of view are not shown on the display.

The synthetic terrain display is intended to aid the pilot awareness of the terrain and obstacles in front of the airplane. It may not provide either the accuracy or fidelity, or both, on which to solely base decisions and plan manoeuvres to avoid terrain or obstacles. The synthetic vision elements are not intended to be used for primary aircraft control in place of the primary flight instruments.

7.4 TAWS FUNCTION

The G500 system optionally contains Class B TAWS, from the GTN650 when the TSO-C151b certified function is activated. Pilots are authorized to deviate from their current ATC clearance to the extent necessary to comply with TAWS warnings.

The TAWS alerts from an external GTN650 TAWS are shown in the following table:

Alert Type	PFD/MFD Alert Annunciation	Aural Message
Excessive Descent Rate Warning (EDR-W)	PULL UP	"Pull Up"
FLTA Terrain Warning (RTC-W, ITI-W)	PULL UP	"Terrain Ahead, Pull Up; Terrain Ahead, Pull Up"* or "Terrain, Terrain; Pull Up, Pull Up"
FLTA Obstacle Warning (ROC-W, IOI-W)	PULL UP	"Obstacle Ahead, Pull Up; Obstacle Ahead, Pull Up"* or "Obstacle, Obstacle; Pull Up, Pull Up"
FLTA Terrain Caution (RTC-C, ITI-C)	TERRAIN	"Terrain Ahead; Terrain Ahead"* or "Caution, Terrain; Caution, Terrain"
FLTA Obstacle Caution (ROC-C, IOI-C)	OBSTACLE	"Obstacle Ahead; Obstacle Ahead"* or "Caution, Obstacle; Caution, Obstacle"
Premature Descent Alert Caution (PDA)	TERRAIN	"Too Low, Terrain"
Voice Callout (VCO-500)	None	"Five-Hundred"
Excessive Descent Rate Caution (EDR-C)	TERRAIN	"Sink Rate"
Negative Climb Rate Caution (NCR-C)	TERRAIN	"Don't Sink"* or "Too Low, Terrain"

7.5 TAWS ANNUNCIATIONS ON THE PFD (FROM AN EXTERNAL TAWS SYSTEM)

The required TAWS annunciations appear in the upper right of the PFD. These annunciations include PULL UP (red), TERRAIN (yellow), TERR N/A (white), TERR INHB (white). These annunciations are not relative to the terrain displayed on the MFD portion of the G500 system. Refer to section 4.2 above for actions to be taken in the event of receiving a TAWS-B alert.

External TAWS alerts on the PFD of the G500 System are only displayed from GNS system 1 and are displayed regardless of the system 1-2 setting, which drives all other PFD and MFD data used by the G500.

The standard G500 SVT system will also provide TERRAIN and OBSTACLE alerts on the PFD in addition to aural alerts.

7.6 PFD KNOB & PFD SOFT KEYS

The basic PFD controls are on the left side of the unit, next to and beneath the PFD display. The rotary knob performs the function annunciated on the display just above the knob: HDG, CRS, ALT, V/S, or BARO. Assigning the function of the knob is done by pressing/releasing one of the dedicated function buttons to the left of the display. The knob defaults back to HDG if it is not rotated for a period of 15 seconds.

The soft keys at the bottom of the PFD display are used to configure the course data displayed in the HSI (CDI button, 1-2 button) and select the optional bearing pointers (BRG1 and BRG2 button) which are may be overlaid in the H.S.I presentation on the PFD. The soft keys operate by press and release.

The units and markings on the PFD are not user configurable. They match the units as specified in the aircraft's EASA approved Airplane Flight Manual and standby instruments. Display and control of the advisory airspeed references are made via the AUX page of the MFD.

7.7 MFD KNOBS & MFD SOFT KEYS

The MFD controls are on the right side of the unit, next to and beneath the MFD display. The rotary knobs scroll through various page groups and pages of the MFD and manipulate data and settings by pressing the knob to activate a cursor. The soft keys operate by press and release. More detailed configuration is available by pressing the MENU button, which is on the right side of the display.

Pressing and holding down the CLR key provides a default route to the main map page on the MFD.

7.8 AUTOPILOT INTERFACE

7.8.1 Basic autopilot interface

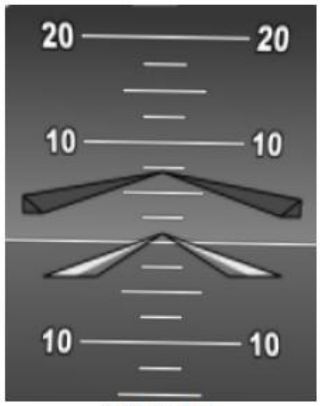
If installed, the S-Tec System 30 or System 55X autopilot are rate based, and use a Turn Coordinator rate gyro for roll attitude sensing and do not take any pitch/roll data from the G500 system.
The G500 typically provides course and heading datum and navigation deviation signals to the autopilot based on the data selected for display on the HSI. For multiple GPS/NAV systems, the G500 acts as a selection hub for the autopilot's NAV mode, and the G500 may also provide GPS Steering data.
System 55X autopilots may provide Flight Director capabilities when the feature is activated, which can be displayed on the G500 Attitude Indicator as a Single Cue Flight Director.
The G500 is not capable of controlling autopilot mode selection or displaying the autopilot selected mode, except for GPS Steering mode when emulating Roll Steering via the autopilot heading mode. See Paragraph 7.8.3.

Refer to the autopilot operator's manual or Airplane Flight Manual Supplement for proper operation of the installed autopilot/flight director system.

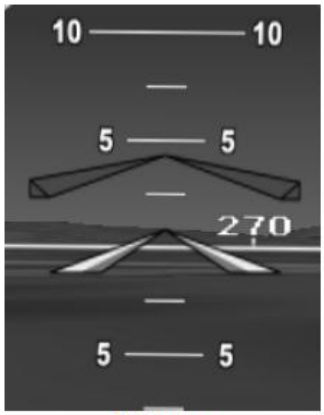
7.8.2 Flight Director display (where installed).

The G500 system limits the distance the flight director pitch commands may deviate from the aircraft attitude icon. In the event that the pitch command provided by the autopilot flight director is greater than the distance allowed by the G500, the command bars will be displayed at the maximum distance allowed by the G500. As the aircraft pitch changes to satisfy the command bars, the bars will continue to be displayed at the maximum distance from the aircraft attitude icon until the aircraft pitch deviation is within the command display limit. In both examples below, the flight director is commanding approximately 7 degrees pitch up. With SVT turned off, the 7 degree pitch up command is displayed with the command bar at 7 degrees pitch up. With SVT turned on, the G500 limits the command bar shown as 4.5 degrees pitch up, which is the maximum deviation that can be displayed.

The G500 system will hold the command bars at the same distance from the aircraft icon until the aircraft pitch attitude is within 4.5 degrees of the command.



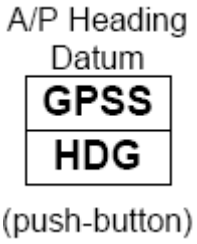
SVT Off



SVT On

7.8.3 Roll Steering emulated via HDG mode

If the autopilot does not have GPS Roll Steering capability, the G500 may emulate this functionality by operating the autopilot in HDG mode and selecting GPS Roll Steering mode via an external switch located on the pilot's instrument panel. A push-button switch as depicted below allows the pilot to select the heading datum source that the autopilot will use.



Whenever GPSS is selected as the autopilot's heading datum source, the mode is annunciated just left of the G500 HSI. The icon is the heading bug with an "X" through it, signifying that GPSS information is overriding the heading bug data.

GPS steering information is then sent via the heading error signal to the autopilot to make the aircraft turn onto course or fly arcs and holding patterns. The G500 HDG bug is decoupled from the autopilot in this mode, but the bug is still controllable and may still be used by the pilot for reference.

If the GPS Roll Steering data becomes invalid, because the GPS system has flagged it or the selected HSI source is not GPS, the text of the GPSS annunciator will be yellow and the data to the autopilot will command wings level flight.

7.9 AUDIO PANEL

The G500 PFD/MFD system is interfaced into the aircraft audio panel to provide aural altering for the altitude alerter, TAWS-B and SVT-Terrain warning functions.

7.10 TRAFFIC SYSTEMS

The G500 PFD/MFD system supports TAS traffic from various active traffic awareness systems. The information from these systems is available and controllable on the MFD. Traffic can also be displayed on the PFD when SVT is activated. Traffic targets will be displayed in their relative position to the aircraft in 3D. Traffic symbols will also change size dependant upon relative distance to the target aircraft.

The display of traffic is an aid to visual acquisition and may not be utilized for aircraft manoeuvring. Refer to the TAS AFMS and pilot's guide for specific system information.

7.11 COURSE POINTER AUTO SLEWING

The G500 HSI will auto slew, i.e. automatically rotate the GPS course pointer to the desired course defined by each GPS leg. The system will also auto slew the VHF NAV course pointer when the CDI transitions to a LOC setting if an ILS, LOC, LOC BC, LDA, or SDF approach is activated in the GPS/WAAS navigator.

The VHF NAV (green) course pointer will only auto slew if the approach is active in the navigator, the LOC frequency is loaded in the active NAV frequency, and *then* the HSI source is changed to the corresponding VHF NAV for the approach. Back Course approaches will auto slew to the reciprocal course.

The system is not capable of automatically setting the inbound VHF NAV course pointer if the approach is not active in the GNS Navigation System or if the approach loaded is any type of VOR approach.
The pilot should always double check the inbound course pointer prior to initiating any transition on any VHF NAV approach. Auto slewing the VHF NAV course pointer to the correct selected course is a database dependent function.

7.12 TERRAIN DISPLAY

The G500 terrain and obstacle information appears on the MFD display as red and yellow tiles or towers, and is depicted for advisory only. Aircraft manoeuvres and navigation must not be predicated upon the use of the terrain display. No commands (PULL-UP etc) are provided from the SVT.

The terrain display is intended to serve as a situational awareness tool only. By itself, it does not provide either the accuracy or the fidelity on which to base decisions and plan manoeuvres to avoid terrain or obstacles.

7.13 DATABASE CARDS

The G500 utilizes several databases. Database titles display in yellow if expired or in question Database cycle information is displayed at power up on the MFD screen, but more detailed information is available on the AUX pages.

The upper Secure Digital (SD) data card slot is typically vacant as it is used for software maintenance and navigational database updates. The lower data card slot should contain a data card with the system's terrain / obstacle information and optional data such as Safe Taxi, Flight Charts and JeppView electronic charts.
The terrain databases are updated periodically and have no expiration date.
Coverage of the terrain database is between North 75° latitude and South 60° latitude in all longitudes. Coverage of the airport terrain database is worldwide.

The obstacle database contains data for obstacles, such as towers, that pose a potential hazard to aircraft. Obstacles 200 feet and higher are included in the obstacle database. It is very important to note that not all obstacles are necessarily charted and therefore may not be contained in the obstacle database. Coverage of the obstacle database includes the United States and Europe. This database is updated on a 56-day cycle and has no expiration date.
Where installed, the Garmin SafeTaxi database contains detailed airport diagrams for selected airports. These diagrams aid in following ground control instructions by accurately displaying the aircraft position on the map in relation to taxiways, ramps, runways, terminals, and services.

This database is updated on a 56-day cycle and has no expiration date. SafeTaxi charts are not available in Europe.

Where installed, the Garmin FliteCharts database contains procedure charts for the coverage area purchased. This database is updated on a 28-day cycle. If not updated within 180 days of the expiration date, FliteCharts will no longer function. FliteCharts are not available in Europe.
Where installed, the Jeppesen JeppView electronic charts database contains procedure charts for the coverage area purchased. An own-ship position icon will be displayed on these charts. This database is updated on a 14-day cycle. If not updated within 70 days of the expiration date, JeppView will no longer function.

7.14 COCKPIT REFERENCE & PILOT'S GUIDES.

The Garmin G500 pilot's guide must be carried on board the aircraft and be immediately available to the flight crew.

Garmin also provides a G500 Cockpit Reference Guide. This reference material is not required to be on board the aircraft but does contain more detailed description and operation of the system.

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