

# SECTION 1 SYSTEM OVERVIEW

The G5 Electronic Flight Instrument is installed as an attitude display indicator (ADI) and/or horizontal situation indicator (HSI). The G5 contains integrated attitude/air data sensors that provide display of attitude and secondary display of air data information. The G5 can also be interfaced to an external sensor to provide heading information. The G5 features a bright, sunlight readable, 3.5-inch color display. In the case of aircraft power loss, the G5 battery sustains the G5 flight display with up to 4 hours of power.

## 1.1 BEZEL OVERVIEW



**Figure 1-1 G5 Bezel Overview**

Control	Action	Description
<b>Power Button</b>	<b>Press</b>	Press to turn unit ON. Press and hold for 5 seconds to turn unit OFF. Once on, press to adjust the backlight.
<b>microSD™ Card Slot</b>		Insert microSD card to update software and log data.
<b>Selection Knob</b>	<b>Press</b>	Press to access the Menu. From the Menu, press to select the desired menu item. Press to accept the displayed value when editing numeric data or selecting from a list.
	<b>Turn</b>	From the Main Menu, turn the Selection Knob to move the cursor to the desired menu item. From the PFD Page, rotate to adjust the barometric setting. From the HSI Page, rotate to adjust the heading or track bug. Turn to select the desired value when editing numeric data or selecting from a list.

Table 1-1 G5 Controls

## 1.2 microSD™ CARDS

The G5 data card slot uses micro Secure Digital (SD) cards. The microSD™ card can be used for software updates and data logging. The maximum supported card size is 32GB.

### Installing an microSD™ Card:

- 1) Insert the microSD™ card in the microSD™ card slot with the card contacts facing down (the card should be flush with the face of the bezel).
- 2) To eject the card, gently press on the microSD™ card to release the spring latch.

# 1.3 APPLYING SYSTEM POWER

During system initialization, the G5 displays the message 'ALIGNING' over the attitude indicator. The G5 should display valid attitude typically within the first minute of applying power. The G5 can align itself both while taxiing and during level flight.

# 1.4 OPERATION

## 1.4.1 G5 ANNUNCIATIONS

When a G5 function fails, a red 'X' is typically displayed over the instrument(s) or data experiencing the failure. Upon applying power to the G5, certain instruments remain invalid as equipment begins to initialize. All instruments should be operational within one minute of applying power. If any instrument remains flagged, and it is not likely an installation related problem, the G5 should be serviced by a Garmin-authorized repair facility .



Figure 1-2 G5 PFD Page Failure Annunciations



Figure 1-3 G5 HSI Page Failure Annunciations

### 1.4.1.1 G5 ATTITUDE

The G5 calculates aircraft attitude using information from its built-in inertial sensors. The G5 also uses GPS and airspeed data to provide the most accurate attitude information. The G5 should display valid attitude within the first minute of applying power.

If the G5 senses the attitude solution is valid, but not yet within the internal accuracy limits, "ALIGNING" is displayed. The displayed attitude information is still accurate and usable while this indication is shown. The G5 can align itself both while taxiing and during level flight.



Figure 1-4 Attitude Aligning Indication

If the G5 senses the attitude solution is invalid, "ALIGNING KEEP WINGS LEVEL" is displayed. No attitude information is displayed while this indication is shown. The G5 can align itself both while taxiing and during level flight.



Figure 1-5 Attitude Aligning Keep Wings Level Indication

If the G5 inertial sensors fail, "ATTITUDE FAIL" is displayed in addition to a red 'X' over the display. No attitude information is displayed while this indication is shown.



Figure 1-6 Attitude Failure Indication

### 1.4.1.2 G5 HEADING

The G5 can display magnetic heading information received from the GMU 11 magnetometer. If magnetic heading input data is not available, the G5 will display GPS-derived ground track and the heading field will have a red 'X' displayed.



Figure 1-7 Heading Fail (PFD Page)



Figure 1-8 Heading Fail (HSI Page)

If both magnetic heading and GPS are unavailable, the heading field will have a red 'X' displayed and the compass card will be removed from the HSI.



Figure 1-9 Heading/Track Fail (PFD Page)



Figure 1-10 Heading/Track Fail (HSI Page)

The G5 corrects for shifts and variations in the Earth's magnetic field by applying the Magnetic Field Variation Database. The Magnetic Field Variation Database is derived from the International Geomagnetic Reference Field (IGRF). The IGRF is a mathematical model that describes the Earth's main magnetic field and its annual rate of change. The database is updated approximately every 5 years via a software update. Failure to update this database could lead to erroneous heading information being displayed to the pilot.

If the G5 senses the magnetic heading measurement is valid but possibly outside of the internal accuracy limits, the numeric heading is displayed in yellow.

If the GAD 29B fails, VFR will be displayed in amber text and GPSS will be displayed in amber text, if GPSS mode is selected.



Figure 1-11 GAD 29B Fail (Amber VFR)



Figure 1-12 GAD 29B Fail (Amber GPSS)

## 1.4.2 BACKLIGHT INTENSITY

When set to Auto, the backlight is automatically adjusted according to ambient light conditions. When set to Manual, the backlight level is set by the pilot.

### Adjusting backlight intensity:

- 1) While the unit is turned on, press the Power Button.
- 2) Turn the Selection Knob to adjust the backlight intensity.
- 3) Press the Selection Knob to close the backlight page.

### Setting the backlight intensity to automatic:

- 1) While the unit is turned on, press the Power Button.
- 2) Press the Power Button again to select **Auto**.
- 3) Press the Selection Knob to close the backlight page.

## 1.5 ACCESSING FUNCTIONALITY

### 1.5.1 PAGES



**NOTE:** The G5 will automatically return to the PFD Page when the aircraft enters an unusual attitude (if enabled in the system configuration). Refer to the Installation Manual for more information.

The G5 has two main pages, the HSI Page and the PFD Page. The HSI Page can be accessed from the PFD Page (unless it has been disabled in configuration).



Figure 1-13 PFD Page



Figure 1-14 HSI Page

Displaying the HSI page from the PFD page:

- 1) From the PFD Page press the Selection Knob to display the Menu.
- 2) Use the Selection Knob to select **HSI**.



**NOTE:** The G5 can be configured to display the PFD or HSI page when power is applied (if allowed by the current system configuration). Refer to the Installation Manual for more information.

### 1.5.2 MENU

Press the Selection Knob to access the G5 Menu. Navigate the menu by rotating the Selection Knob and make selections by pressing the Selection Knob.



Figure 1-15 PFD Page Menu



Figure 1-16 HSI Page Menu

# 1.6 MESSAGES

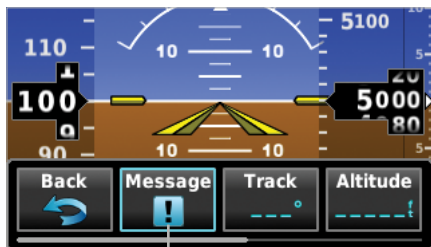
A message [!] indicator appears in the left corner of PFD and HSI Page to alert the pilot of any status messages. The message [!] indicator flashes when there is a new message that has not been viewed.



Figure 1-17 Message [!] Indicator - PFD

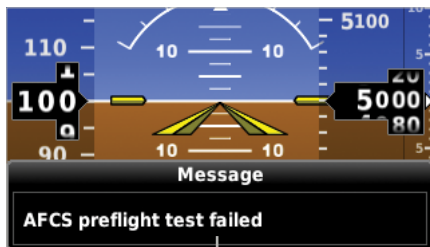
## Viewing messages on the PFD and MFD Page:

- 1) Press the Selection Knob to display the Menu. The Message Menu Option will appear.
- 2) If necessary, turn the Selection Knob to highlight the **Message** Menu Option.
- 3) Press the Selection Knob to select **Message**. A list of messages is displayed.



Message [!] Indication Menu Option

Figure 1-18 Message [!] Menu Option (PFD Page)



Message Details

Figure 1-19 Messages [!] Displayed (PFD Page)



## 1.6.1 SYSTEM MESSAGES

The following table describes G5 system messages that may appear. System messages are displayed in white text.

Table 1-2 System Messages

Message	Meaning
<b>External Power Lost</b>	Aircraft power has been removed from the G5.
<b>Critical battery fault! Powering off</b>	Battery has critical fault condition and the unit is about to power off to avoid damage to the battery.
<b>Battery fault</b>	Battery has a fault condition – unit needs service.
<b>Battery charger fault</b>	Battery charger has a fault condition – unit needs service.
<b>Low battery</b>	Battery charge level is low.
<b>Hardware fault</b>	Unit has a hardware fault – unit needs service.
<b>Power supply fault</b>	Unit power supply fault detected – unit needs service.
<b>Unit temperature limit exceeded</b>	Unit is too hot or too cold.
<b>Network address conflict</b>	Another G5 with the same address is detected on the network (most commonly a wiring error on one of the units).
<b>Communication error</b>	General communication error (most commonly appears in conjunction with Network Address Conflict message).
<b>Factory calibration data invalid</b>	Unit calibration data not valid – unit needs service.
<b>Magnetic field model database out of date</b>	Internal magnetic field database is out of date - software update required.
<b>Magnetometer Hardware fault</b>	The magnetometer has detected a fault – unit needs service. Heading data may not be available.
<b>Using external GPS data</b>	GPS data from another network LRU is being used. The unit's internal GPS receiver is enabled, but unable to establish a GPS fix.

Table 1-2 System Messages

Message	Meaning
<b>Not receiving RS-232 data</b>	The G5 is not receiving RS-232 data from the GPS navigator – system needs service.
<b>Not receiving ARINC 429 data</b>	The G5 is not receiving ARINC 429 data from the navigation source – system needs service.
<b>GPS receiver fault</b>	The G5 on-board GPS receiver has a fault.
<b>ARINC 429 interface configuration error</b>	The G5 ARINC 429 port is receiving information from an incorrect source – system needs service.
<b>Software version mismatch</b>	The G5 attitude indicator and the G5 HSI units have different software. Cross fill of baro, heading and altitude bugs is disabled.