Southeastern Oklahoma State University
Aviation Sciences Institute

AVIATION

Cessna 172 New Avionics Quick Guide

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This document is supplemental in nature and should not be used as sole reference when using the systems described herein. Any questions or comments relating to this document should be directed to the Chief Pilot at KThomas@se.edu or LComeau@se.edu

Revision 1.0	5/12/2023	Original
Revision 1.1	6/13/2023	Initial Release

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Garmin G5 Electronic Flight Instrument System

The upper Garmin G5 unit will indicate aircraft attitude via inertial sensors. The G5 will show valid attitude within 1 minute of being turned on.

Backlight

The Garmin G5 backlight is automatically controlled via the ambient light sensor by default.

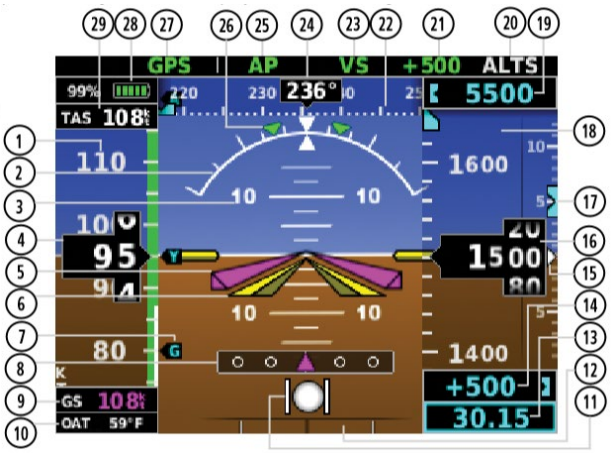
If desired, the user can also manually adjust brightness by pressing the power button, and twisting the selection knob. Automatic brightness is turned back on by pressing the power button twice.

Pages

The G5 features two primary pages, PFD and HSI. Each unit is capable of displaying both pages, and switching pages can be done by pressing the selection knob, twisting to the **PFD** or **HSI Tab**, and then pressing again on the selection knob.

Primary Flight Display (PFD)

1. Airspeed Indicator
2. Attitude Indicator
3. Pitch Scale
4. Current Airspeed
5. Command Bars
6. Aircraft Symbol
7. V-speed Reference
8. Course Deviation Indicator
9. Ground Speed (GS)
10. Outside Air Temperature
11. Slip/Skid Indicator
12. Turn Rate Indicator
13. Altimeter Barometric Setting
14. Selected Vertical Speed
15. Vertical Speed Indicator
16. Current Altitude
17. Vertical Speed Bug
18. Altimeter
19. Selected Altitude
20. Altitude Select Mode
21. Selected Vertical Speed
22. Navigation Course
23. Vertical Speed Mode
24. Current Heading or Ground Track
25. Auto Pilot Mode
26. Rate of Turn Triangles
27. GPS Mode
28. Battery Status
29. True Airspeed



Note: Command bars are not available on SE aircraft at this time.

Horizontal Situation Indicator (HSI)

The **HSI Page** on the Garmin G5 adds an instrument not previously present in typical 6-pack Cessna 172 aircraft. The horizontal situation indicator combines the features of a vacuum driven directional gyro and CDI.

1. Wind Speed and Direction
2. Heading Bug
3. Navigation Source
4. Aircraft Symbol
5. CDI
6. Bearing Pointer
7. Desired Track
8. Selected Heading/Ground Track
9. Rotating Compass Rose
10. CDI Scale Annunciations
11. Current Heading
12. Distance To Waypoint

The G5 incorporates a wing-mounted magnetometer which always aligns with magnetic North, negating the need to recalibrate the heading indicator to North when flying. The magnetometer also negates any measurable magnetic deviation caused by the aircraft.

HSI Operation

CDI indications on the HSI work very similar to that of a traditional CDI. The HSI will draw a straight line which represents the selected course. Any deviations from the selected course will be shown by a shorter line which moves left and right of the selected course line. It should be noted that the pilot must still manually select a course for the HSI when using VLOC for the system to indicate correctly.

The Garmin G5 units installed in Southeastern aircraft are coupled to the GTN 650 and are able to display information from the GPS and NAV 1 radio. GPS information on the G5 is displayed in magenta, where VOR or LOC information is depicted in green. This document will show how to switch between GPS and VLOC modes later in the **Mid-Continent MD41 Annunciation Control Unit guide**.

Twisting the selection knob on this page will move the heading bug. Course selection when using VOR/LOC or OBS mode on the GPS can be achieved by pressing the selection knob and twisting to the **Course Tab** and pressing in on the selection knob, you can then twist the knob to select the desired course.

Bearing Pointer

The G5 offers an optional bearing pointer display on the HSI page which will act much like an ADF, except for VOR/LOC and GPS. Turning on the bearing pointer display can be done by pressing the selection knob, and twisting to the **Setup Tab** and pressing the selection knob again. From this menu, twist to bearing pointer 1 or 2, press the selection knob, and select the desired source (None, GPS, or VLOC).

Abnormal Operations

The G5 will show failures through display of red X's on the affected components. The G5 contains an internal battery that will continue operating if external power to the aircraft is lost. Battery status will be displayed in the top left corner of the G5 when battery power is in use.

PS Engineering PMA7000BT Audio Panel

Power & Volume

Power to the panel is operated via the left volume knob. Pushing the inner button in will turn off the panel. Volume control is done by twisting either the outer passenger volume knob or the inner crew volume knob.

Receiving

The top 3 left buttons, as well as the Nav, ADF, DME, and MKR buttons control which radio you will hear transmissions from. A green light indicates which radios are being heard. The user can select to listen from multiple radios at once by pressing the button for the corresponding radio.

Transmitting

The lower 3 buttons on the left side control which radio the crew will transmit on when pressing the PTT switch on the yoke. A green light will indicate which radio you will transmit on. Pressing the bottom button on any radio will automatically set that radio to receiving mode as well.

Isolation Modes

The isolation switch has three positions. The upper ISO button will isolate the pilot from the intercom. The middle ALL position allows all users to hear and talk on the intercom. The lower CREW position will allow the crew to speak on an independent channel from the passengers.

Chronos CH93MAX Clock, OAT, Voltmeter, and USB Charger

The CH93MAX is a multi-purpose instrument which replaces the older Davtron clock. The unit includes the following modes:

- Clock & Flight Timer
- Volt Meter
- Outside Air Temperature

The modes can be selected by pressing the left MODE button. The timer can be controlled by using the + button to start and pause the timer, as well as the – button to reset the timer when it is paused. Press and hold MODE to switch between count UP and count DOWN modes.

Mid-Continent MD41 Annunciation Control Unit

The MD41 Annunciation control unit adds a new feature to Southeastern Cessna 172s allowing for pilots to switch between GPS and VLOC modes with the use of a physical button, rather than using the default nav page on the GTN 650 GPS unit. The unit also adds the capability to suspend approaches, and operate the GPS OBS which previously were done only on the GTN 650 unit. The MD41 has various annunciators including GPS loss of integrity (LOI), GPS modes, and an indication for new GPS messages.