

HB-PPT

GARMIN

GI 275™ Pilot's Guide



Auszug aus den Garmin Unterlagen:
-> GI275 Quick Reference Guide
-> GI275 Pilot's Guide
Part Engine Indication System

GI 275 Quick Reference Card

Power On



To power on the GI 275 without aircraft power, push and release the Inner Knob.

GI 275 Touch Buttons

Touch Buttons have a raised appearance and allow touch selection.

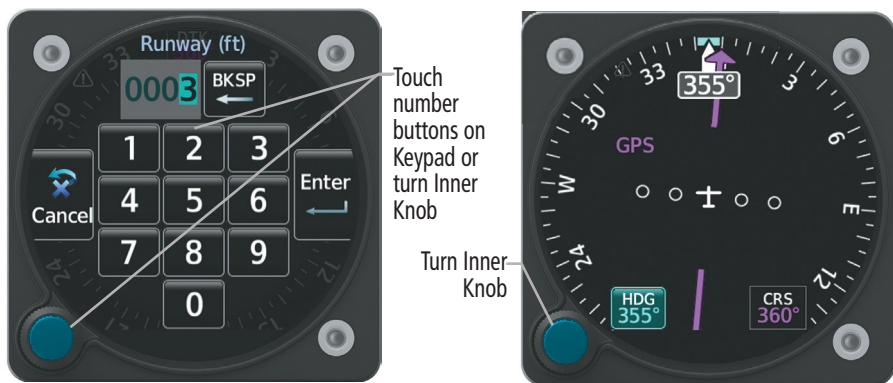
Cyan border or highlight indicates a button is active and ready to receive pilot input, including but not limited to data field adjustments, sync functions, or accessing further options.




GI 275 Data Entry


Touch the number buttons or turn the Inner Knob to adjust the keypad data field.

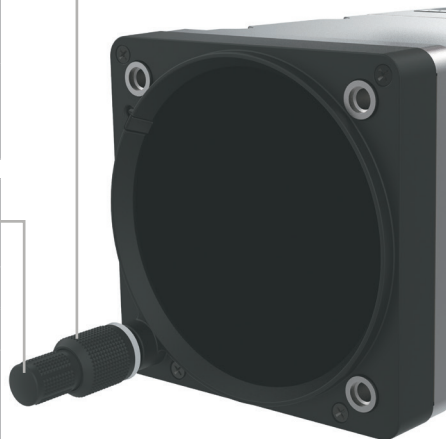
Turn the Inner Knob to adjust an active data field on any main page (ADI Page, CDI Page, HSI Page, etc).



GI 275 Knob Functions

Outer Knob 	
Turn Clockwise	Change page to right Scroll down menu fields Move data field cursor to right
Turn Counter Clockwise	Change page to left Move data field cursor to left Scroll up menu fields

Inner Knob 	
Turn Clockwise	Adjust data field (increase)
Turn Counter Clockwise	Adjust data field (decrease)
Push	Power on Select highlighted field Sync active field
Push and Hold	Display/Remove menu



GI 275 Touch Functions

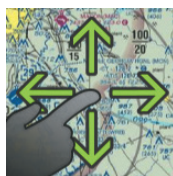
Display Menu

Swipe from bottom of screen to display menu



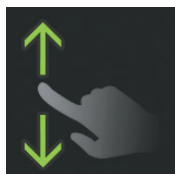
Panning

Touch any map or chart to activate panning mode
Touch and drag finger on screen to pan the map



Scroll

Touch and scroll while holding finger on screen for smooth, slow scrolling
Touch, scroll, and release finger from screen to scroll quickly.



Zoom

Pinch in to zoom out on any map or chart
Stretch (pinch out) to zoom in on any map or chart



SECTION 3 ENGINE INDICATION SYSTEM

3.1 INTRODUCTION



NOTE: The display of Engine Indication System Pages depends upon the current configuration and may vary from the examples discussed in this section.



NOTE: When configured as a Primary EIS, a half screen menu is available and individual page options are accessed via the generic Options Button. When configured as a Standby ADI or as an MFD, a full screen menu is available and individual page options are accessed via the page-specific Options button (e.g. Fuel Options Button on the 'Fuel' Page Menu). Page titles may vary depending on configuration as well.

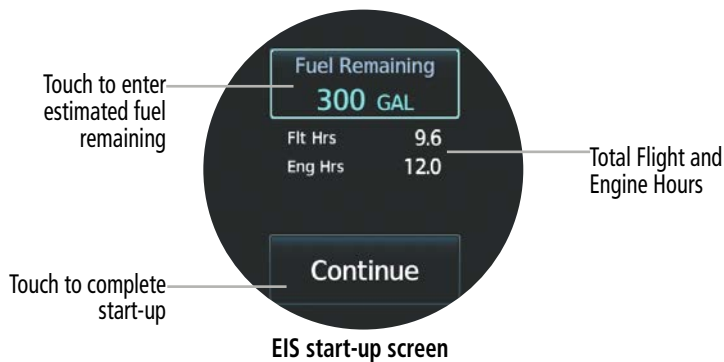
Engine Indication System (EIS) Pages can display engine, fuel, electrical, and other system parameters. A variety of gauge and indicator types (analog indicators, digital data fields, bar graphs, horizontal and vertical bar indicators) are used to display EIS information. Primary Gauges which must be displayed during all phases of flight, such as RPM, Fuel Quantity, and Manifold Pressure (if applicable) are displayed at the top of each EIS Page.

The 'Main' Page displays any alerting gauges. The 'AUX' Page may be available for non-alerting gauges which do not fit on the 'Main' Page. Additionally, other EIS Pages may be configured including the 'EGT' Page, 'CHT' Page, and 'Fuel' Page. See the EIS Pages portion of this section for more information.

Engine data is constantly being monitored, regardless of the current page displayed. If any exceedance of engine parameters (according to the configuration) occurs, a pop-up alert will be issued so that the condition can be quickly reviewed by the pilot. For more information on EIS alerts and annunciations, see the EIS Alerts portion at the end of this section.

START-UP SCREEN

A start-up screen displays flight hours and engine hours, along with the **Fuel Remaining** Button. Flight hours are metered when airborne; if the MFI is not able to assess the air/ground state, flight hours are metered when the engine RPM exceeds 1,250 RPM. Engine hours are metered any time engine oil pressure exceeds 5 psi.



EIS start-up screen

Entering fuel remaining on start-up screen:

- 1) Power on the MFI. The EIS start-up screen is displayed.
- 2) Select the **Fuel Remaining** Button.
- 3) Use the keypad to enter the estimated fuel on board.
- 4) Select the **Enter** Button to confirm the entry and return to the start-up screen.
- 5) Select the **Continue** Button to complete start-up.

3.2 GAUGE AND INDICATOR TYPES



NOTE: Display indications depend upon the current configuration and may vary from the examples discussed in this section.

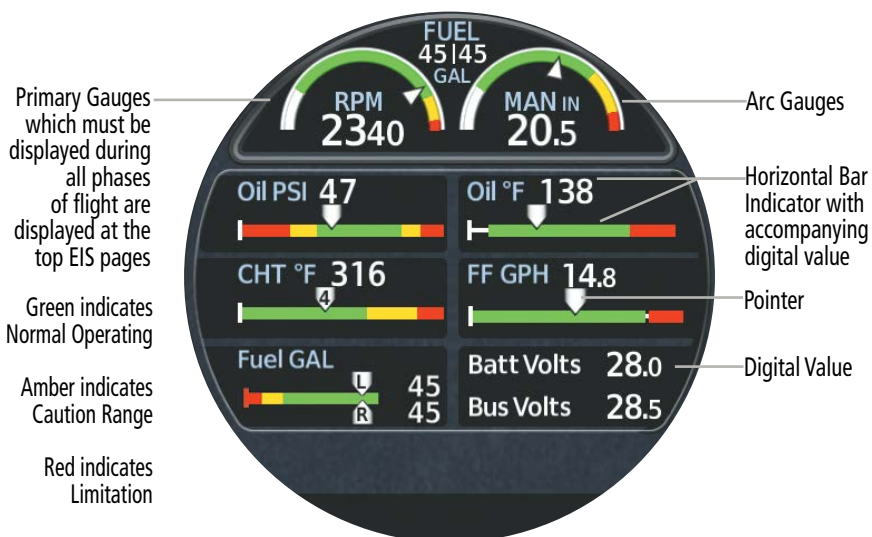


NOTE: For aircraft equipped with a starting vibrator, the RPM reading is not accurate during engine cranking. For aircraft that measure engine RPM using P lead sensors, the reading may momentarily fluctuate when selecting operation on a single magneto.

Gauge format and page layout vary depending on configuration. RPM, Fuel Quantity, and Manifold Pressure (if applicable) will be displayed at the top of every EIS Page. Units of measure, limits, and gauge colors are configured during installation.

Digital Values may be displayed in white text. The color green indicates normal ranges of operation. For a gauge with a green range, white or uncolored markings indicate operating ranges not considered cautionary. When a gauge has no defined range in green or is unmarked, the middle range of the gauge shall be the acceptable operating range.

Amber radial line or range denotes a caution range. Red minimum/maximum line or range denotes a limitation. For information on annunciations and flashing color or text, see the EIS Alerts portion at the end of the EIS Section.






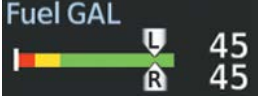
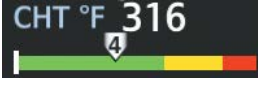




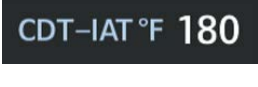

'Main' Page – Example Configuration


Gauges appearing as arc gauges on one page may appear as a vertical or horizontal bar on another. Exceptions include the Tachometer (RPM) and Manifold Pressure (MAN) Gauges which are always displayed as arc gauges. Other indications may display pointers, digital values, curves, or behavior bands.

The following table provides an example of the different kind of gauge and indicator types. This list is not all inclusive; gauge and indication display depend on configuration.

Type	Example
Tachometer (RPM)	
Manifold Pressure Gauge	
Oil Pressure	

- System Overview
- Flight Instruments
- EIS**
- Navigation
- Hazard Avoidance
- Autopilot
- Additional Features
- Appendices
- Index

Type	Example
Oil Temperature	
Fuel Pressure	
Fuel Flow	
Fuel Quantity	
Cylinder Head Temperature (CHT)	
Exhaust Gas Temperature (EGT)	
Turbine Inlet Temperature (TIT)	
Inlet Air Temperature (IAT)	
Compressor Discharge Temperature (CDT)	
IAT CDT Temperature Differential	
Alternator AMPS	

Type	Example
Battery AMPS	Batt Amps 62
Bus Voltage	Bus Volts 28.5
Battery Voltage	Batt Volts 28.0
Carburetor Temperature	Carb °C 10 

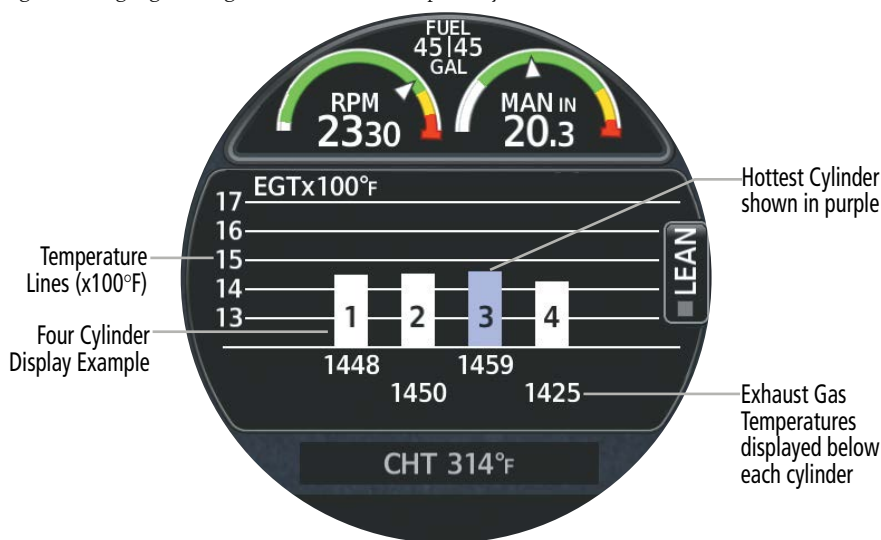
Example Gauge and Indicator Types

BAR GRAPH INDICATIONS

EGT and CHT information may be displayed as a bar graph. Information for each cylinder is shown which can be useful for observing engine indications and performing leaning procedures. Each bar graph contains the following components:

- Dynamic chart depicting cylinder temperature status
- Digital temperature reading of each cylinder
- Limit markings

The size of each graph varies based on engine specifications (i.e. the number of cylinders per engine) and gauge configuration (i.e., TIT or primary EGT).



EGT Bar Graph Example

MULTI-ENGINE INDICATIONS

Display of EIS information for multi-engine aircraft requires one MFI per engine.

Propeller Sync Indicator

A Propeller Sync Indicator can be displayed at the top of each EIS Page. The indicator spins in the direction of the higher-speed propeller when the propellers are out of sync. When two or more MFIs are configured to show EIS, the propeller sync indicator need only be displayed on one MFI; other indications, such as fuel quantity, may be displayed at the top of the EIS Pages on the other MFI(s).



Propeller Sync Indicator Example

3.3 EIS PAGES

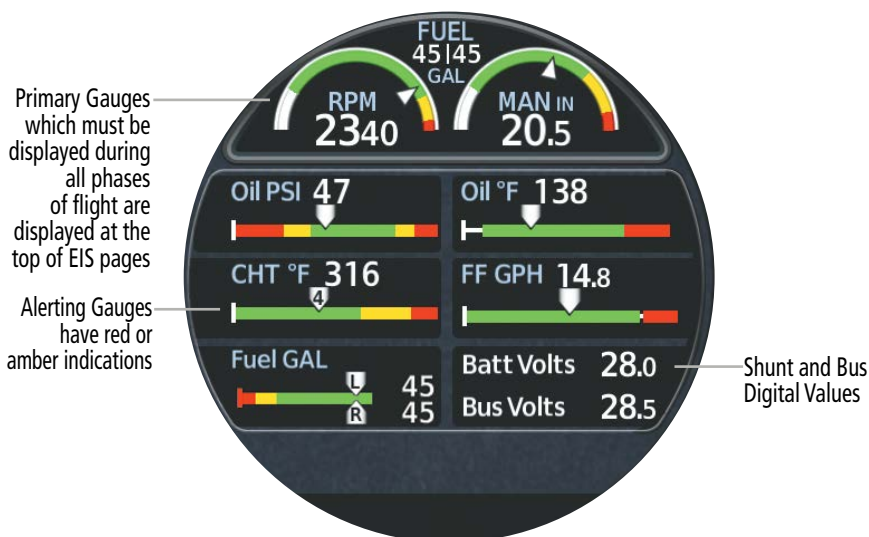


NOTE: Display indications depend upon the current configuration and may vary from the examples discussed in this section.

The EIS can display and monitor engine performance and power. Only a set amount of data is displayed on one page at a time in order to improve pilot monitoring and reduce workload. This section will cover the individual pages which may be available, depending on configuration.

MAIN PAGE

All alerting gauges are displayed on the 'Main' Page (when the MFI is configured as an MFD, Standby ADI, or Standby HSI, this page may, instead, be labeled 'Main EIS' Page). An alerting gauge is any gauge with cautionary (amber) or limitation (red) indications. See the EIS Alerts portion later in this section for more information on alerts. Shunt and Bus Digital Values may also be displayed on the 'Main' Page.



'Main' Page – Example Configuration

Advisory Options

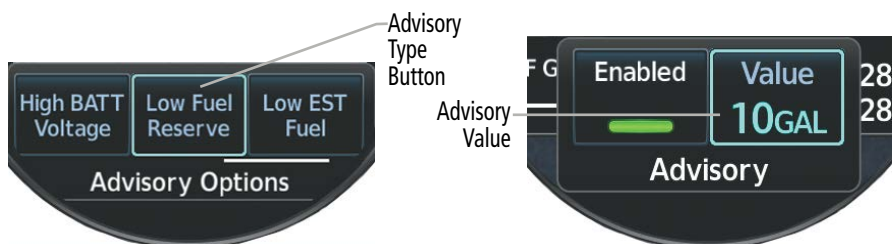
Pilot-defined advisories can be created for certain engine parameters. Advisory options may be adjusted, enabled, or disabled. Access Advisory Options via the page menu on the 'Main' Page.

Pilot-defined advisories can be set for any value within the indicator's range, regardless of pre-configured warning (red) and caution (amber) limitations. Enabling a pilot-defined advisory does not affect pre-configured warning and caution alerting behavior. See the EIS Alerts portion of this section for more information on warning and caution alerting.

Advisory options are determined by configuration, and may include the following:

- High CHT
- High TIT
- Low Oil Temperature
- High Oil Temperature
- High Bus Voltage
- Low Bus Voltage
- High EGT Differential
- Low Battery Voltage
- High Battery Voltage
- Low Fuel Reserve
- Low Estimated Fuel

When an advisory parameter has been exceeded, an advisory message will be issued. Advisories can be acknowledged in the same manner as other system messages.



Advisory Options

Adjusting engine advisory settings:

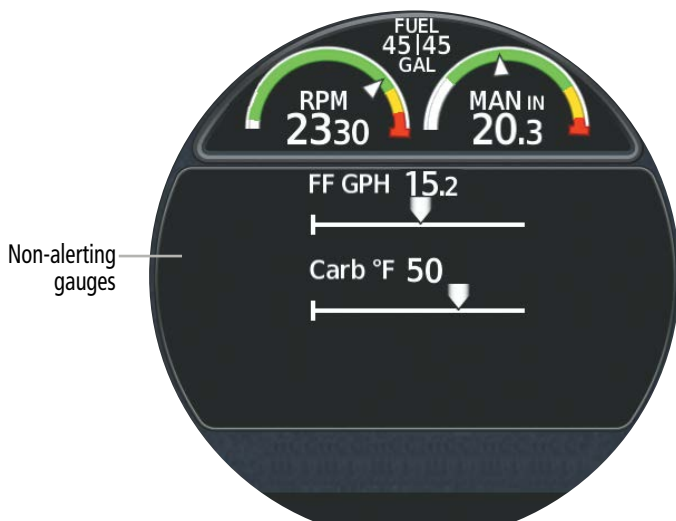
- 1) From the 'Main' Page, open the page menu and select **Options**.
- 2) Select the desired Advisory Type Button.
- 3) Select the **Value** Button and use the Inner Knob to enter the advisory value, then select the **Enter** Button to confirm the entry.

Enabling/disabling an engine advisory:

- 1) From the 'Main' Page, open the page menu and select **Options**.
- 2) Select the desired Advisory Type Button.
- 3) Select the **Enable** Button to enable or disable the advisory. The advisory is enabled when the annunciator bar is green.

AUX PAGE

Additional gauges which do not fit on the 'Main' Page and are not alerting gauges, display on the 'AUX' Page (when the MFI is configured as an MFD, Standby ADI, or Standby HSI, this page may, instead, be labeled 'AUX EIS' Page). Advisory Options may be accessed from the page menu on this page as well.

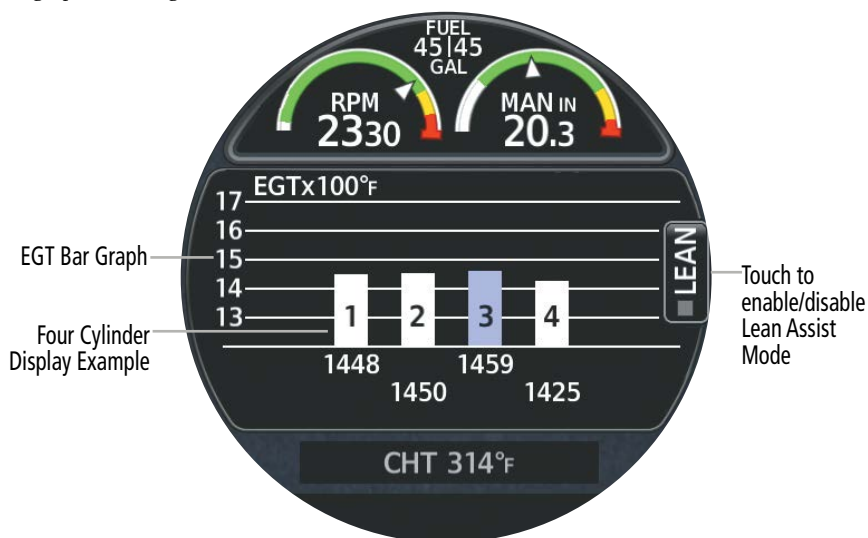


'AUX' Page Example

EGT PAGE

The 'EGT' Page graphically displays EGT data for each cylinder. Graduations are scaled and sized during installation. Other data which may be displayed, including CHT, TIT, or Primary EGT information, depend on the configuration.

Measured EGT is displayed below each bar, and the hottest cylinder is automatically detected, and its bar is colored purple. If available, TIT will be displayed digitally and within the graph at the right side as a blue bar labeled 'T'.



'EGT' Page Example

Lean Assist Functions

Depending on configuration, Lean Assist functions may be available. In Lean Mode, the 'EGT' Page displays markings above each cylinder to indicate Peak EGT during leaning operations.



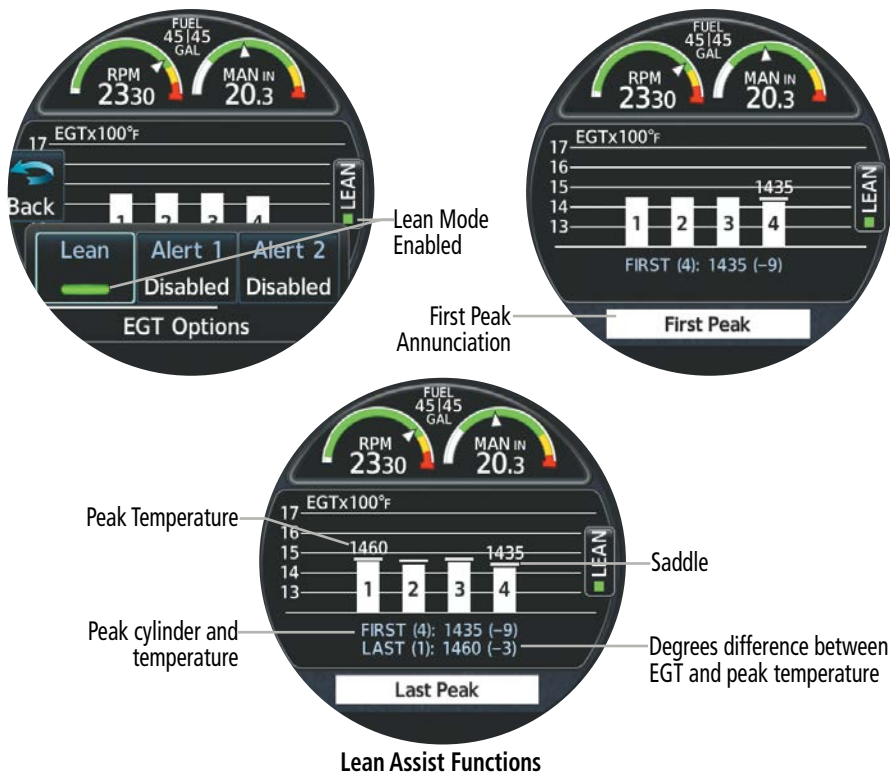
NOTE: See the current, pertinent flight manual for specific engine leaning procedures.

Lean Assist functions can be activated by enabling the Lean Mode. The **LEAN** Button will display a green annunciator when Lean Mode is enabled, and all cylinders are colored white.

Once the temperature rises, peaks, and decreases as configured by the system, Peak EGT is determined, and the following will occur:

- The Peak temperature will be indicated above the corresponding cylinder. The 'First Peak' annunciation is displayed at the bottom of the page, and information about the peak temperature is displayed below the graph.

- A white saddle indicates the maximum temperature value recorded for the sensor. In cases where the system waits for the last engine cylinder to peak, white saddles indicate the maximum temperature of all other peaked cylinders.
- After three seconds, the 'First Peak' annunciation is replaced by a field indicating the first peak cylinder, the peak temperature, and the difference between the first peak and the last peak.
- Once the last cylinder has peaked, the temperature will be indicated above the corresponding cylinder. The 'Last Peak' annunciation is displayed at the bottom of the page, and information about the peak temperature is displayed below the graph.
- The difference between the last peak and the current EGT temperature will be displayed for leaning Rich of Peak (ROP).



Lean Assist Functions

Enabling/Disabling Lean Assist Mode:

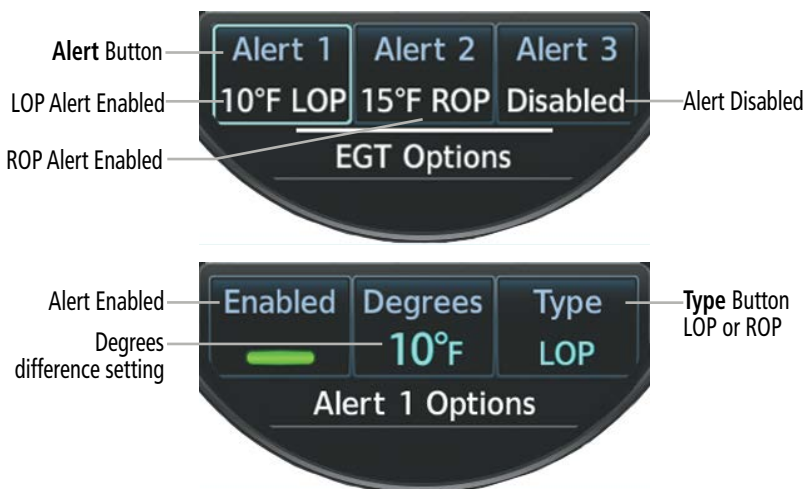
Touch the **LEAN** Button on the 'EGT' Page to enable/disable. Lean Assist Mode is enabled when the annunciator square is green.

Or:

- 1) From the 'EGT' Page, open the page menu and select **Options**.
- 2) Select the **Lean** Button to enable/disable. Lean Assist Mode is enabled when the annunciator bar is green.

ALERT OPTIONS

Lean alert settings may be adjusted, enabled or disabled. The Rich of Peak (ROP) alert indicates the first engine cylinder to reach Peak EGT during the leaning process. The Lean of Peak (LOP) alert indicates the last engine cylinder to reach Peak EGT during the leaning process.



Lean Alert Settings

Adjusting lean alert settings:

- 1) From the 'EGT' Page, open the page menu and select **Options**.
- 2) Select the desired **Alert** Button.
- 3) Select the **Degrees** Button and use the Inner Knob to enter the degree difference from Peak for the alert setting. Then, select the **Enter** Button to confirm the entry.
- 4) Select the **Type** Button to toggle between the ROP and LOP alert type.

Enabling/disabling lean alert settings:

- 1) From the 'EGT' Page, open the page menu and select **Options**.
- 2) Select the desired **Alert** Button.
- 3) Select the **Enabled** Button to enable or disable the alert. The alert is enabled when the annunciator bar is green.

CHT PAGE

The 'CHT' Page graphically displays CHT data for each cylinder. Graduations are scaled and sized during installation. Other data which may be displayed, including EGT or TIT information, depend on the configuration.

System Overview

Flight Instruments

EIS

Navigation

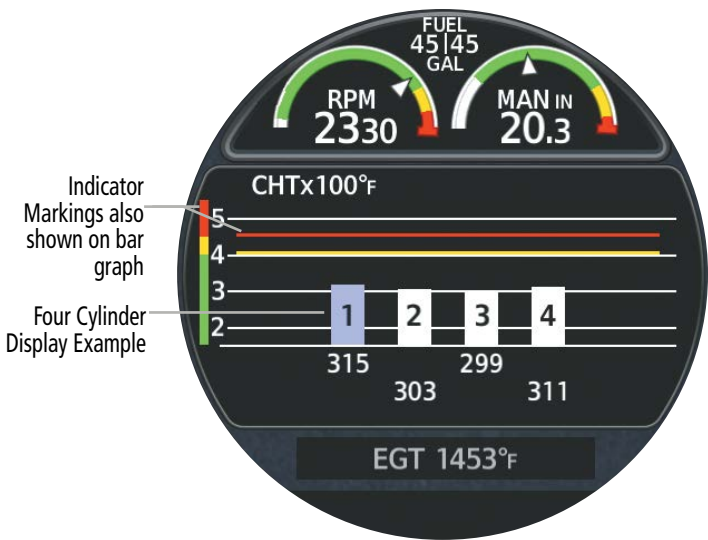
Hazard Avoidance

Autopilot

Additional Features

Appendices

Index

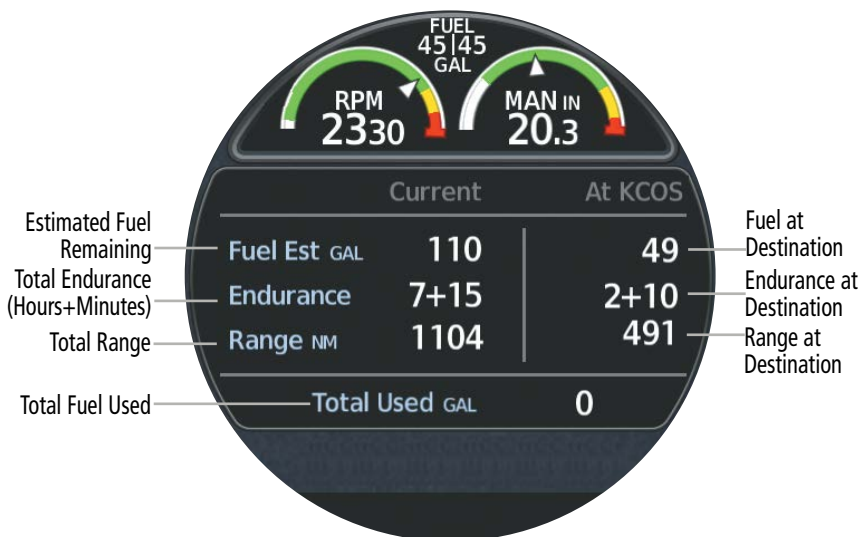


'CHT' Page Example

FUEL PAGE

The 'Fuel' Page displays fuel calculations based on the Estimated Fuel Remaining and GPS ground speed. Estimated Fuel Remaining is input by the pilot at start-up or via the **Fuel Est** Button on the Fuel Options Menu. Alternatively, Estimated Fuel Remaining data may be sourced from an external system with engine fuel flow sensor. If an external system is providing fuel remaining data, the **Fuel Est** Button is subdued.

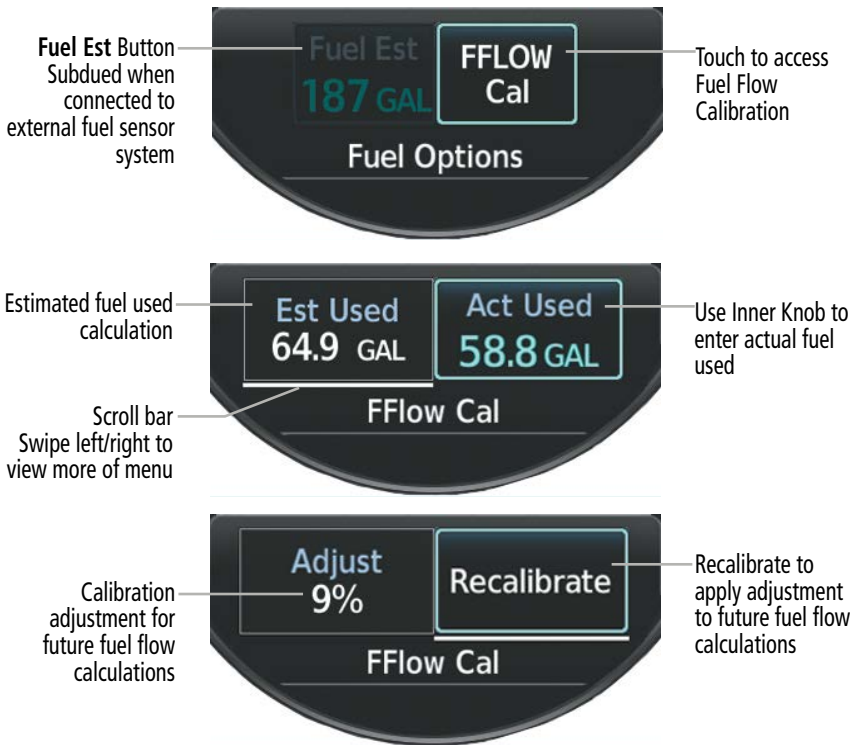
If an external navigator is configured, the 'Fuel' Page will also display fuel calculations based on flight plan information.



'Fuel' Page Example

Fuel Flow Calibration

The Fuel Flow Calibration feature compares the estimated fuel used calculation to the actual fuel used (input by the pilot upon refueling) and a calibration adjustment is displayed as a percentage. This adjustment can then be applied to future fuel flow calculations.



Fuel Flow Calibration

Entering Estimated Fuel Remaining (without external fuel sensor):

- 1) From the 'Fuel' Page, open the page menu and select **Options**.
- 2) Ensure the **Fuel Est** Button is selected (cyan highlight). Then, use the Inner Knob to adjust the estimated fuel remaining.

Recalibrating fuel flow calculations:

- 1) From the 'Fuel' Page, open the page menu and select **Options**.
- 2) Select the **FFLOW Cal** Button. A scrolling menu for fuel flow calibration is displayed. Swipe left or right to view all fuel flow calibration buttons.
- 3) Select the **Act Used** Button. Use the Inner Knob to enter the actual fuel used and select the **Enter** Button.
- 4) The estimated fuel used value is compared to the actual fuel used input and a calibration adjustment is displayed. Select the **Recalibrate** Button.
- 5) Touch the **Confirm** Button to confirm and apply this adjustment to future fuel flow calculations. To cancel, select the **Back** Button and return to the fuel flow calibration menu.

3.4 ABNORMAL OPERATIONS

EIS ALERTS



NOTE: Refer to the current aircraft flight manual for alert corrective procedures.



NOTE: Alert indications depend on the current configuration and may vary from the examples discussed in this section.

Amber and red indications on gauges represent caution and warning limitations, respectively. Exceedance of any caution or warning limitation triggers an alert, and a flashing annunciation is displayed at the bottom the page. The associated gauge, indicator, or text may also flash or change color.

The annunciation banner can be displayed at the bottom of any EIS page. An annunciation will continue to flash until it is acknowledged. To acknowledge an alert, press the Inner Knob or touch the flashing annunciation. Regardless of what EIS page the alert is acknowledged from, touching the flashing annunciation (or pushing the Inner Knob) automatically displays the 'Main' Page so that the alerting condition may be quickly reviewed.

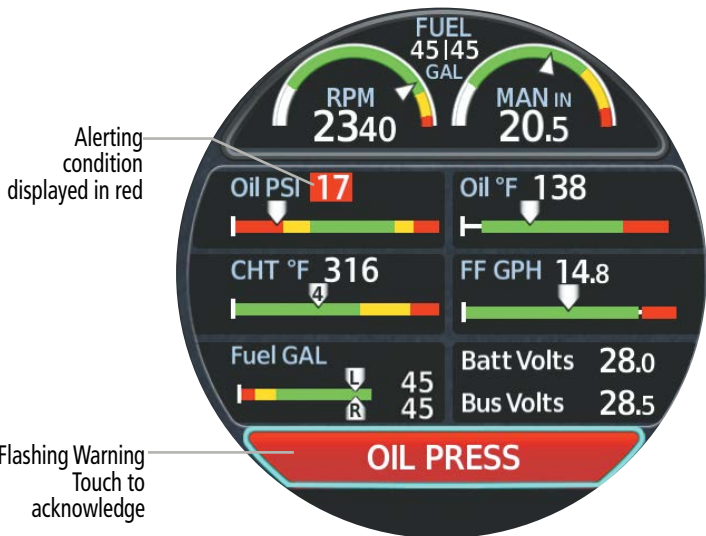
Once an alert has been acknowledged, the annunciation will stop flashing. However, the annunciation (and cautionary/warning indications) continues to display until normal operating conditions are restored.

When multiple alerts are issued, the color and text for the highest priority condition is displayed. See the following table for the display hierarchy of annunciations.

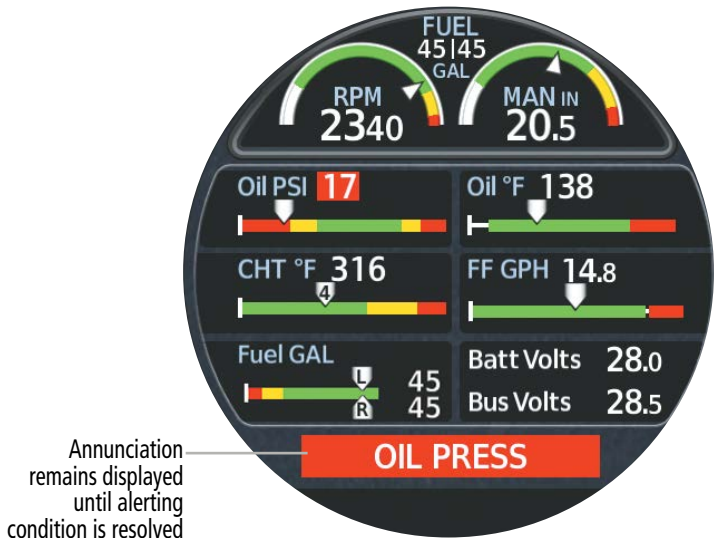
Alert Hierarchy	Example
1. Unacknowledged Warning	(Flashing)
2. Acknowledged Warning	
3. Unacknowledged Caution	(Flashing)
4. Acknowledged Caution	

EIS Alert Hierarchy of Annunciations

- System Overview
- Flight Instruments
- EIS**
- Navigation
- Hazard Avoidance
- Autopilot
- Additional Features
- Appendices
- Index



Flashing Oil Pressure Warning Annunciation



Acknowledged Oil Pressure Warning Annunciation



Garmin International, Inc.

1200 East 151st Street
Olathe, KS 66062, U.S.A.

Garmin AT, Inc.

2345 Turner Road SE
Salem, OR 97302, U.S.A.

Garmin (Europe) Ltd.

Liberty House, Hounsdown Business Park
Southampton, Hampshire SO40 9LR U.K.

Garmin Corporation

No. 68, Zhangshu 2nd Road
Xizhi District, New Taipei City, Taiwan

Contact Garmin Product Support or view warranty information at flygarmin.com.

