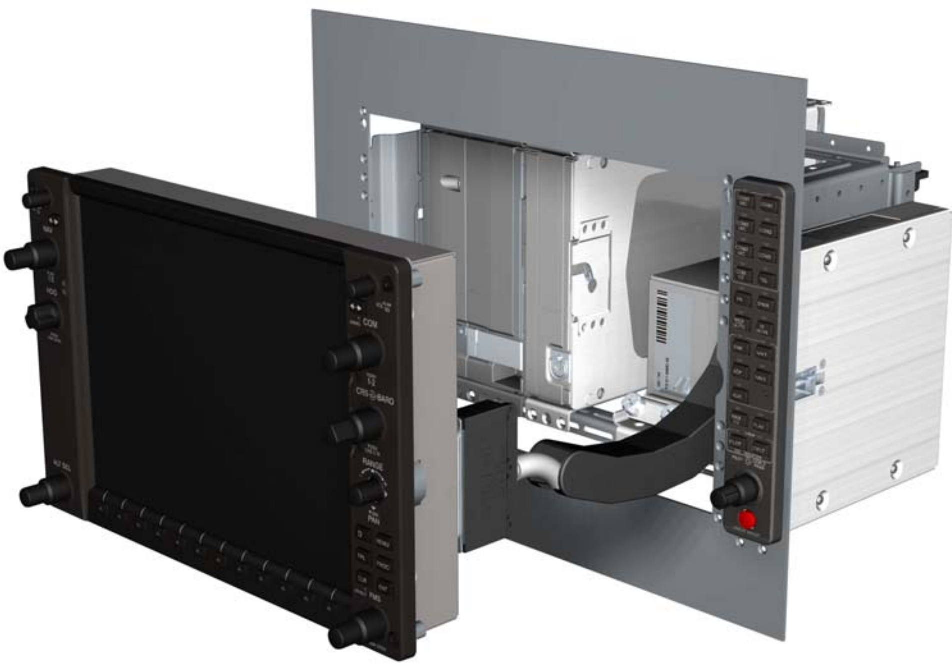
CIRRUS PERSPECTIVE®
LINE MAINTENANCE MANUAL

(SR20/SR22/SR22TN)



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RECORD OF REVISIONS

REVISION	DATE	SECTION	PAGE	DESCRIPTION
A	5/28/08	------	------	Initial Release
B	6/25/08	------	------	Revised manual to more closely match specific production aircraft troubleshooting issues, and to match revised GDU software version 9.01.
C	11/19/08	------	Cover	Changed cover style to match other Garmin LMMs
		Global	All	Global change from “De-Ice Protection Option” to “Ice Protection Installation Option”
D	4/24/09	------	Cover	Added SR20 to title.
		------	vi	Changed GDU software version from 9.01 to 9.14.
		1	1-1	Added SR20 to opening paragraph.
		2	2-1	Added SR20 to opening paragraph. Added SR20 to table title.
		2	2-1	Added with and without YD options for the GFC 700.
		2	2-2	Revised section 2.1, added new section 2.2, and renumbered rest of the section. Added 1040 displays.
		3	3-1	Deleted Figure 3-1, Single AHRS, Single ADC Configuration.
		3	3-2	Deleted Figure 3-2, Single AHRS, Dual ADC Configuration.
		3	3-1 through 3-3	Added 1040A to Figures 3-1 to 3-3.
		3	3-5	Added new section 3.3, S-TEC® 55X/55SR Autopilot.
		3	3-6	Added new figure 3-6 depicting S-TEC® interface.

REVISION	DATE	SECTION	PAGE	DESCRIPTION
		4	4-1	Added SR20 to section 4.1.
		4	4-3	Added Maintenance Log page to table 4-1. Changed GDC page Group name to ADC. Added ADC Configuration page. Switched the positions of the GFC and GMA groups in Table 4-1. Switched the position of the GDL and GFC groups in Table 4-1. Added the OTHER configuration page (optional STEC®) in Table 4-1. Added Remote Controller Status Configuration Group in Table 4-1. Added Fuel Tank Calibration Page to CAL group in Table 4-1.
		4	4-5	Updated figure 4-4.
		5	Global	Changed all references of PFD1 to PFD. Removed all references to PFD2. Changed all PFDs to PFD. Every table that includes replacing the master configuration module as a possible troubleshooting step removed, along with the note about the database cards.
		5	5-9	Updated system status page (Figure 5-3).
		5	5-18	Added CHNL 4 IN to table, Recoverable Data Module (RDM).
		5	5-21	Added CHNL 1 IN to table, FIKI Optional Stall Warning Computer.
		5	5-28	Added CHNL 4 IN to table, Guardian CO2 Detector.
		5	5-47	Added Cooling Fan Note to 5.4.3.
		5	5-85	Added troubleshooting step to correct Aileron Mistrim condition.
		7	7-2	Completely revised section 7.1.1. Removed note.
		7	7-9	Added NH and FIKI to step ii.
		7	7-9	Added NH and FIKI to step vi.
		7	7-13	Updated figure 7-2. Removed note.

REVISION	DATE	SECTION	PAGE	DESCRIPTION
		7	7-15	Added SR20 to first paragraph.
		7	7-16	Added SR20 to opening paragraph of section 7.3.7.
		7	7-17	Updated figure 7-5. Revised procedure to match current GDU software.
		7	7-19	Removed statement regarding the location of the startup screens, checklist files and ChartView database.
		7	7-32	Added SR20 to step one.
		7	7-35	Added SR20 to step one.
		7	7-43	Removed references placing the PFD in configuration mode in section 7.5.2.1.
		7	7-46	Added NH and FIKI to step 12. Added step c; SR22 (only) Oil Temperature Sensors (2) – GEA Configuration file.
		7	7-50	Updated figure 7-15, XM Radio Page.
		7	7-55	Removed step 6 under 7.11.2.2.
		7	7-56	Deleted 7.11.2.4, Manual Electric Pitch Trim Speed Check.
		8	8-3	Removed AFCS disconnect bullet point.
		8	8-4	Changed 'ENT Key' to '12th Key' on the MFD.
		10	10-2	Added SR20 to the text in section 10.3.
		10	10-4	Revised steps 5 through 8 of 10.4.2 to allow for the updating of the splash screen after MFD and PFD software load.
		10	10-5	Added SR20 to step 2 in section 10.4.3.

REVISION	DATE	SECTION	PAGE	DESCRIPTION
		10	10-8	Revised entire section 10.4.4 through step T. Added important statement regarding loading splash screen.
		10	10-25	Added SR20 to step 2.
		10	10-27	Revised section 10.9.
E	9/21/09	Front Content	ix	GDU software version to 10.0.
		1	1-1	Page 1-1: changed name of SR22T to “SR22 Turbo Normalized.”
		2	2-1	Changed name of SR22T to “SR22 Turbo Normalized.”
		4	4-2	Added statement at the end of section 4.3.
			4-4	Revised table 4-1 to support GDU 10.0 software.
		5	5-10	Added new section 5.4, Data Path Indications oin the Main and GIA Configuration pages.
			5-16	Added new section 5.5, Troubleshooting Tables.
			5-102	Added new section 5.17, Troubleshooting the S-TEC 55x Interface.
		7	7-2	Revised sections 7.1.1 and 7.1.2, GDU Software Loading and Configuration Procedure.

REVISION	DATE	SECTION	PAGE	DESCRIPTION
		8	8-4	Edited opening paragraph in section 8.5.
			8-8	Added new section 8.5.1, Port Status Tests and added new screen shots to support text.
		10	Global	Changed name of SR22T to “SR22 Turbo Normalized.”
			10-25	Added section 10.7, Navigation Databases for GDU 10.0.
			10-27	Added “Pre GDU 10.0” to section title.
			10-28	Added “Expanded Basemap” to section title. Changed wording of Jeppesen ChartView, Cirrus Startup Screens, and Cirrus Checklist text.
			10-29	Added steps to troubleshooting table.
			10-31	Added SVS related alert message table.

DOCUMENT PAGINATION

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Front Matter	I to xviii
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Appendix	A-1 to A-32

This manual reflects the operation and configuration of GDU software version 10.0.

The following are general safety precautions that are not related to any specific procedure and therefore do not appear elsewhere in this maintenance manual. These are recommended precautions that personnel should understand and apply during the many phases of maintenance and repair.

KEEP AWAY FROM LIVE CIRCUITS. Maintenance personnel shall observe all safety regulations at all times. Turn off system power before making or breaking electrical connections. Regard any exposed connector, terminal board, or circuit board as a possible shock hazard. Components which retain a charge shall be discharged only when such grounding does not result in equipment damage. If a test connection to energized equipment is required, make the test equipment ground connection before probing the voltage or signal to be tested.

DO NOT SERVICE ALONE. Personnel shall not under any circumstances reach into or enter any enclosure for the purpose of servicing or adjusting the equipment without immediate presence or assistance of another person capable of rendering aid.

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WARNING

This product, its packaging, and its components contain chemicals known to the State of California to cause cancer, birth defects, or reproductive harm. This Notice is being provided in accordance with California's Proposition 65. If you have any questions or would like additional information, please refer to the Garmin web site at www.garmin.com/prop65.

CAUTION

The GDU lamps contain mercury and must be recycled or disposed of according to local, state, or federal laws. If you have any questions or would like additional information, please refer to our web site at the following website:
www.garmin.com/aboutGarmin/environment/disposal.jsp.

CAUTION

The GDU 1xxx lens is coated with a special anti-reflective coating which is very sensitive to skin oils, waxes and abrasive cleaners. CLEANERS CONTAINING AMMONIA WILL HARM THE ANTI-REFLECTIVE COATING. It is very important to clean the lens using a clean, lint-free cloth and an eyeglass lens cleaner that is specified as safe for anti-reflective coatings.

NOTE

Actual software configuration may differ between different aircraft models. Procedures given in this manual are for general reference only. Always refer to approved OEM aircraft installation and/or maintenance information for correct software versions/part numbers and procedures for a specific aircraft model when returning an aircraft to service.

NOTE

To more closely match the LRU nomenclature displayed on the configuration pages, and where appropriate, only the prefix of the LRU will be listed (i.e., GTX 33(X); GTX, etc.). The only duplicate in the prefix of any LRU pertains to the GDL 69(X) XM Satellite Receiver and the GDL 90 GPS WAAS Receiver/UAT. The suffix will be added in that situation.

CONTENTS

SECTION 3—SYSTEM OVERVIEW

SECTION 4—CONFIGURATION MODE

SECTION 5—TROUBLESHOOTING

SECTION 6—LRU REPLACEMENT PROCEDURES

SECTION 7—LRU SOFTWARE INSTALLATION AND TESTING

SECTION 8—RETURN TO SERVICE TESTING

SECTION 9—PERIODIC MAINTENANCE

SECTION 10—SYSTEM RECONFIGURATION

APPENDIX—CONNECTOR PIN ASSIGNMENTS

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SECTION 1

INTRODUCTION

This manual provides maintenance information for the Cirrus Perspective™ System by Garmin configured in Cirrus SR20, SR22, and SR22 Turbo Normalized aircraft. Troubleshooting, LRU replacement, uploading/ configuring software, and return to service testing procedures are included.

NOTE

This manual presumes familiarity with the basic operating procedures covered in the Garmin Perspective™ Pilot's Guide (P/N 190-00820-00) and Cockpit Reference Guide (P/N 190-00821-00).

1.1 MANUAL ORGANIZATION

Section 1	Introduction
Section 2	LRU Descriptions
Section 3	System Overview
Section 4	Configuration Mode
Section 5	Troubleshooting
Section 6	Replacement Procedures
Section 7	LRU Software Installation and Testing
Section 8	Return To Service Testing
Section 9	Periodic Maintenance
Section 10	System Reconfiguration
Appendix	Connector Pin Assignments

Section one describes manual organization. Sections two and three describe the LRUs and give an overview of the system. Section four explains the configuration mode and the role it plays in troubleshooting along with limited user interface information. Section five describes troubleshooting procedures that help isolate a defective LRU. Section six lists procedures helping the technician replace a defective LRU.

Section seven gives details on how to install, configure, and test software for a replacement LRU. Sections eight and nine present return to service tests and periodic maintenance procedures. Section 10 describes how to completely reconfigure the system should it become necessary. The appendix illustrates and lists the names of system connector pins.

SECTION 2

LRU DESCRIPTIONS

This section describes the standard and optional Garmin Line Replaceable Units (LRUs) that can be configured in a Perspective™ System for Cirrus SR20, SR22, and SR22 Turbo Normalized aircraft.

Table 2-1. SR20/SR22/SR22 Turbo Normalized LRU Configurations

LRU/FUNCTION	O/S
GDU 1240A MFD/PFD (12” Screen)	•
GDU 1040A MFD/PFD (10” Display)	•
GDC 74A #1 (Air Data Computer)	•
GDC 74A #2 (Air Data Computer)	OPT
GRS 77 #1 (AHRS)	•
GRS 77 #2 (AHRS)	OPT
GIA 63W #1 (GPS/Com/Nav)	•
GIA 63W #2 (GPS/Com/Nav)	•
GMA 347 (Audio Panel)	•
GCU 478 (Keypad)	•
GTX 32 (Mode A/C Transponder)	•
GTX 33 ES (no TIS-A) (Mode S Transponder)	OPT
GEA 71 (I/O Unit)	•
GDL 69 (XM Weather)	OPT
GDL 69A (XM Weather and Audio)	OPT
GRC 10/GRT 10 (XM Audio Remote)	OPT
GFC 700 (without YD) AFCS	OPT
GFC 700 (with YD) AFCS	OPT
GMC 705 (AFCS Controller)	OPT
GSA 80/81 Servo Actuators	OPT
GTA 82 Pitch Trim Adapter	OPT
Terrain	•
TAWS-B	OPT
ChartView (Jepp Charts)	OPT
FliteCharts® (NACO Charts)	•
SafeTaxi® (Garmin Data)	•
Flight Director	•
Terrain-SVS	•
• Standard Equipment; OPT=Optional	

2.1 GDU 1240A-30/1040A-30 (1)

Figure 2-1. GDU 1240A-30/1040A-30 Display

This unit features a 12 or 10.4-inch LCD with 1024 x 768 resolution. The unit installed on the left/pilot side is designated as the PFD. This PFD communicates with the GDU 1240A-20/1040A-20 (MFD), and with the on-side GIA 63W Integrated Avionics Unit through a High-Speed Data Bus (HSDB) connection.

2.2 GDU 1240A-20/1040A-20 (1)

Figure 2-2. GDU 1240A-20/1040A-20 Display

This unit features a 12 or 10.4-inch LCD with 1024 x 768 resolution. The unit installed on the right/copilot side is designated as the MFD. This MFD communicates with the GDU 1240A-30/1040A-30 (PFD), and with the on-side GIA 63W Integrated Avionics Unit through a High-Speed Data Bus (HSDB) connection.

2.3 GMA 347 AUDIO PANEL

Figure 2-3. GMA 347 Audio Panel

The Garmin GMA 347 is a horizontally oriented panel-mounted audio control panel and marker beacon system. The GMA 347 is FAA TSO Authorized to C50c, and C35d Class A.

Warning and alert audio provided by the GMA 347 is received from the GIA 63W Integrated Avionics Units (IAUs). The GMA 347 communicates with both GIA 63W LRUs using RS-232. Software and configuration settings are received through a RS-232 digital interface with the GIA 63W.

2.4 GIA 63W INTEGRATED AVIONICS UNIT (IAU) (WAAS Enabled)

Figure 2-4. GIA 63W Integrated Avionics Unit

The GIA 63W is the central 'Integrated Avionics Unit' (IAU) in the Perspective™ system, linking all LRUs to the PFD and MFD. The GIA 63W contains the following hardware:

- MAIN1 – contains all processor circuitry, digital I/O, 3.3V power supply, and the COM power supply. The COM and WAAS Module plug directly onto the MAIN1 board.
- COM – 16W communications transceiver.
- GPS - WAAS Module.
- MAIN2 – contains all analog and unique I/O, a power supply for the synchro outputs, and the MAIN1 power supply with capacitor backup. The NAV receiver plugs directly onto the MAIN2 board.
- NAV receiver – VOR/LOC (VLOC) and Glideslope receivers.

The GIA 63W communicates directly with the displays through an HSDB Ethernet connection. Software and configuration settings are sent from the displays through the GIA 63W to other LRUs in the system.

2.5 GDC 74A AIR DATA COMPUTER

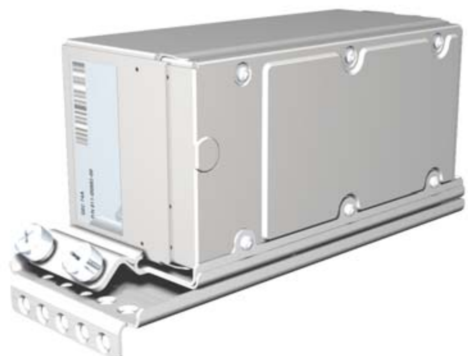


Figure 2-5. GDC 74A Air Data Computer

The GDC 74A provides pressure altitude, airspeed, vertical speed, and OAT information to the system using data received from the pitot/static system and the OAT probe. The GDC 74A communicates with the GIA 63Ws, GDU 1240As and GRS 77s using an ARINC 429 digital interface.

2.6 GEA 71 ENGINE/AIRFRAME UNIT

Figure 2-6. GEA 71 Engine/Airframe Unit

The unit is a microprocessor based input/output system used to monitor sensor inputs and drive annunciator outputs for aircraft airframes and engine systems. Sensors include engine temperature and pressure and fuel measurement and pressure. The GEA communicates directly with both GIA 63Ws using RS-485 digital interface. Software and configuration settings for operation are received through RS-232 digital interface with the GIA.

2.7 GTX 32/33 TRANSPONDERS

Figure 2-7. GTX 32 Transponder

Figure 2-8. GTX 33 Transponder

2.7.1 GTX 32 Transponder

The GTX 32 ATCRBS Transponder provides Mode A and C capabilities for ATC and TCAS I surveillance requirements. The GTX 32 interfaces with the No. 1 and No. 2 GIA 63W LRUs via RS-232.

2.7.2 GTX 33 Transponder

The GTX 33 Mode S Transponder provides Mode A, C, and S capabilities for ATC and TCAS I surveillance requirements. The GTX 33 interfaces with the No. 1 and No. 2 GIA 63W LRUs via RS-232.

2.8 GRS 77 ATTITUDE, HEADING, AND REFERENCE UNIT (AHRS)

Figure 2-9. GRS 77 AHRS Unit

The Garmin GRS 77 is an attitude and heading reference systems (AHRS) that provides aircraft attitude (roll, pitch, and heading), angular rate, and acceleration information to the GIAs, and GDU 1240A LRUs.

2.9 GMU 44 MAGNETOMETER

Figure 2-10. GMU 44 Magnetometer

The GMU 44 is a three-axis magnetometer providing the following:

- Measurement of three axes of magnetic field strength.
- Measurement of two axes of tilt.
- Measurement of GMU44 internal temperature.
- Output of the above information in digital form to the GRS 77 through RS-485.

2.10 GDL69/69A SATELLITE DATA LINK RECEIVER

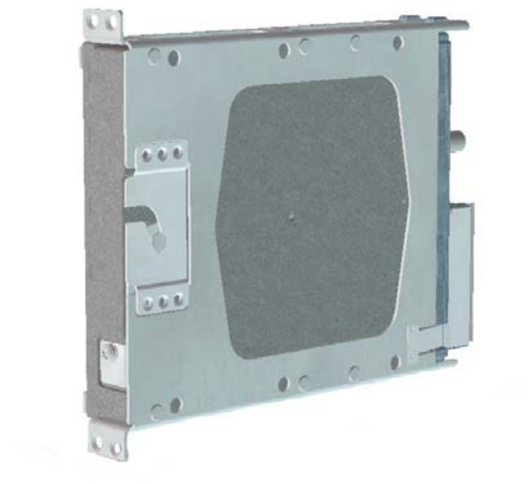


Figure 2-11. GDL 69A Satellite Data Link Receiver

The GDL 69A is a satellite data link receiver providing weather information in real-time and digital audio entertainment. The weather information is displayed on the MFD and PFD inset map. The GDL 69A communicates with the MFD through an HSDB connection. A subscription to the XM satellite radio service is required before the GDL 69A can be enabled.

2.11 GSA 80/81 AFCS SERVO ACTUATOR/GSM 85A SERVO GEARBOX

Figure 2-12. GSA 80/81 Servo Actuator

2.11.1 GSA 81 Servo Actuator

The GSA 81 Servo Actuator is an electromechanical component that provides automatic control of the aircraft pitch and roll control surfaces.

2.11.2 GSA 80 Servo Actuator

The GSA 80 Servo Actuator is an electromechanical component that provides automatic control of the aircraft yaw control surfaces.

2.11.3 GSM 85A Servo Gear Box

The GSM 85A Servo Gear Box is used with a Garmin GSA 80 or GSA 81 (GSA 8X) servo actuator to control one axis of flight control, or its associated trim, as part of the GFC 700 flight control system. It connects directly into the flight control system via cables, chains, push rods, or other means and transmits the power from the motor in the servo actuator to the flight controls, when engaged. The GSM 85A is a mechanical appliance with no software of electronic hardware.

2.12 GTP 59 OAT PROBE

Figure 2-13. GTP 59 OAT Probe

The GTP 59 OAT Probe provides outside air temperature measurements which are used by the GDC 74A. The GTP 59 communicates to the system through the GDC 74A/B.

2.13 GCU 478 REMOTE CONTROLLER

Figure 2-14. GCU 478 Control Unit

The GCU 478 provides certain redundant control features and is the control for HDG, CRS, and ALT SEL.

2.14 GMC 705 AFCS Control Unit

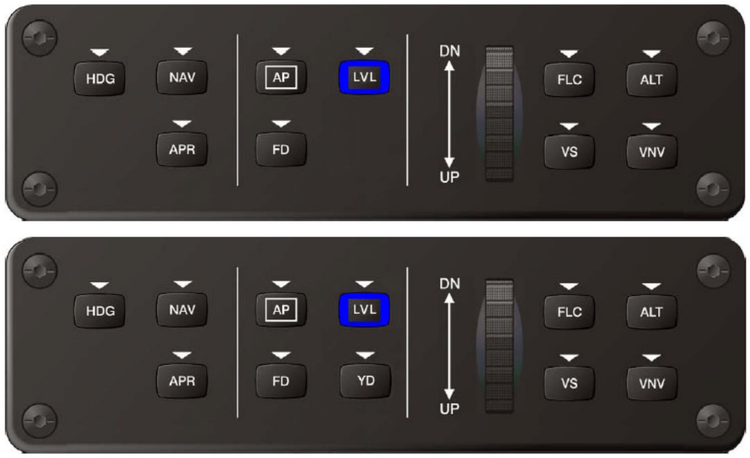


Figure 2-15. GMC 705 AFCS Control Unit

The GMC 705 is a panel-mounted user interface that enables the aircraft's flight crew to control the GFC 700 Automatic Flight Control System (AFCS). The GMC 705 has nine mode-select keys and a thumbwheel encoder. The GMC 705 sends (over an RS-232 serial data bus) the switch status information to be used elsewhere in the Perspective™ System. The CDU (Control Display Unit) defines the functionality of the user inputs, the GMC only reports which buttons are pressed or encoder turns.

2.15 GTA 82 TRIM ADAPTER

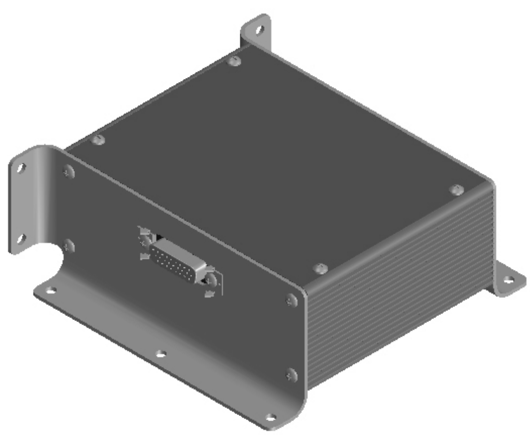


Figure 2-16. GTA 82 Trim Adapter

The Garmin GTA 82 Trim Adapter is a remote mounted device that is used to allow the GFC 700 to drive a trim actuator provided by the airframe manufacturer. In such cases, the trim adapter provides the required interface.

2.16 MISCELLANEOUS LRUs

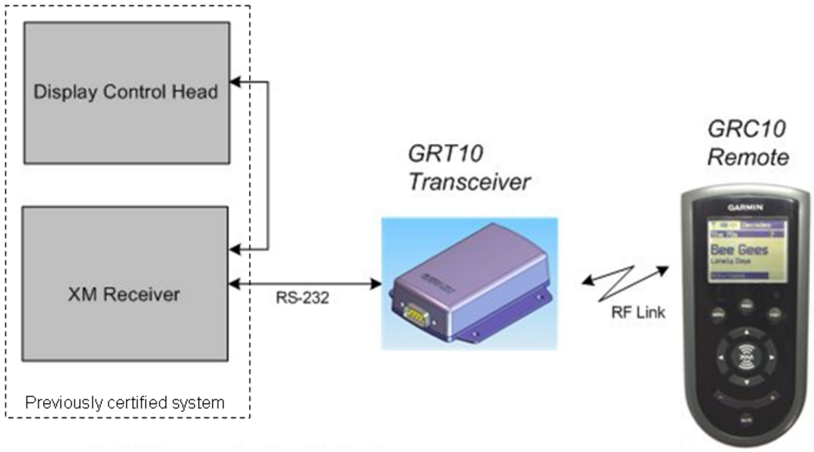


Figure 2-17. GRT 10 Remote Controller and GRC 10 Wireless Transceiver

2.16.1 GRC 10 XM Remote Control

The GRC 10 allows a passenger to interface with the GDL XM radio without inputs from the pilot or co-pilot.

2.16.2 GRT 10 XM Wireless Transceiver

The GRT 10 allows the user to remotely interface with the GDL XM radio.

SECTION 3

SYSTEM OVERVIEW

This section describes the basic characteristics of the Perspective™ System. Figures 3-1 through 3-3 illustrate system interconnect block diagrams showing single and dual AHRS and ADC configurations.

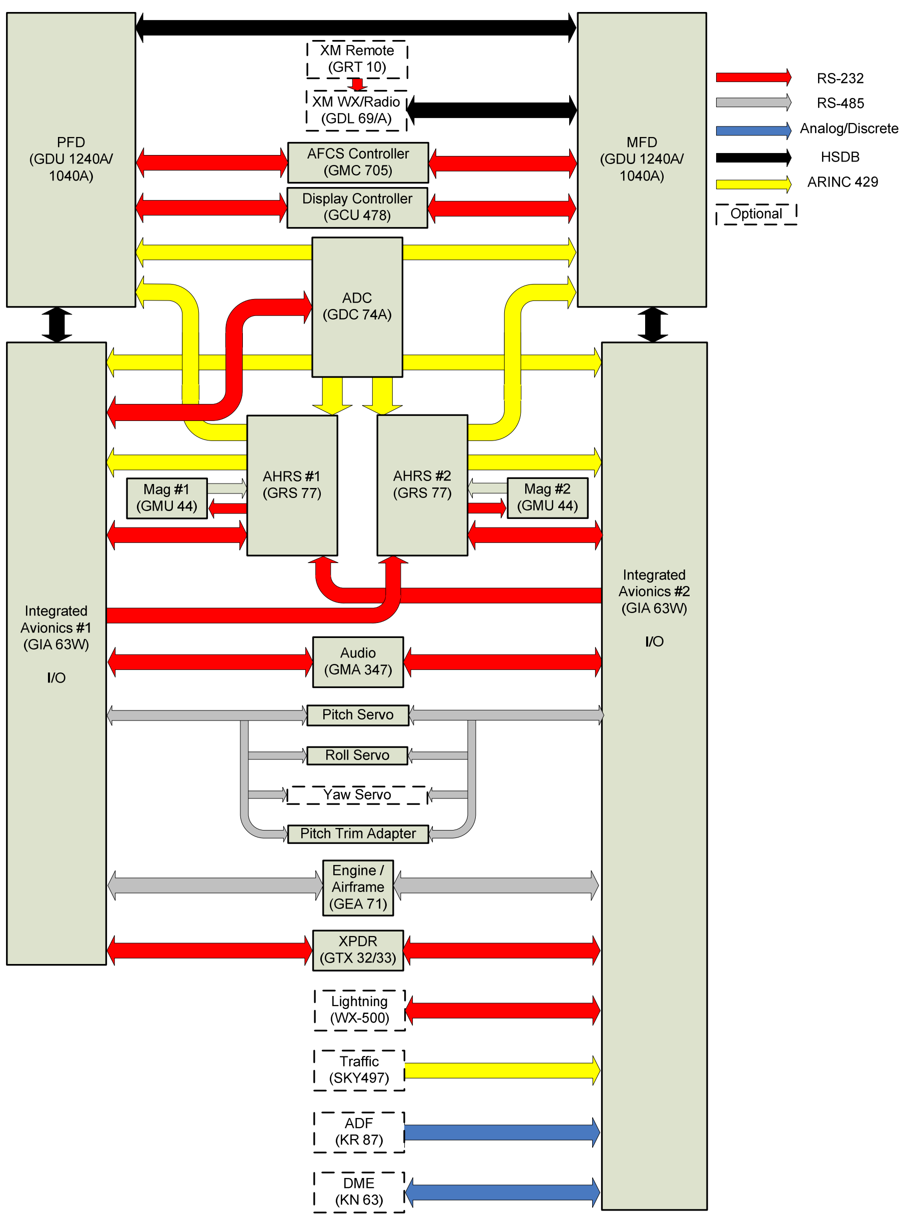


Figure 3-1. Dual AHRS, Single ADC Configuration

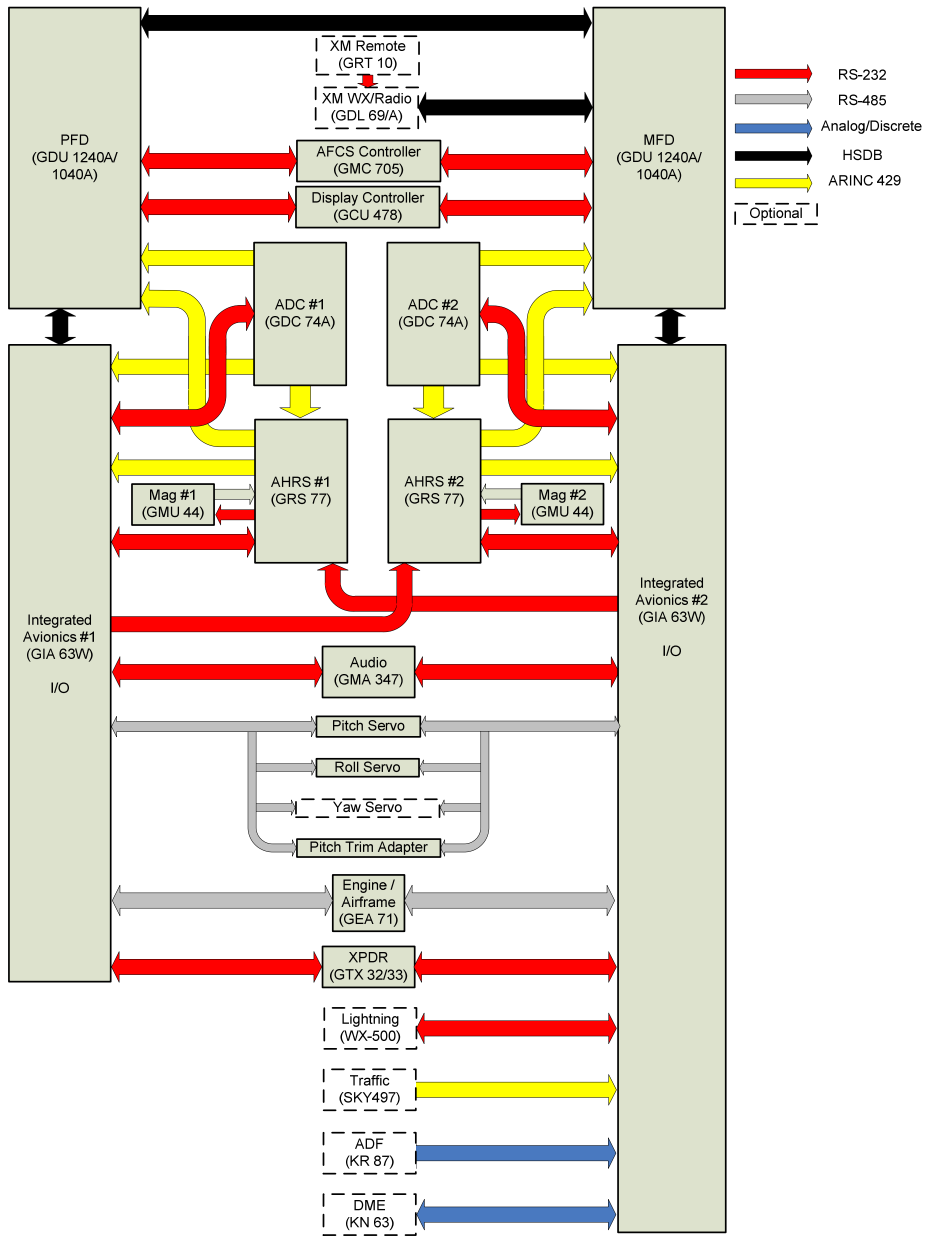


Figure 3-2. Dual AHRS, Dual ADC Configuration

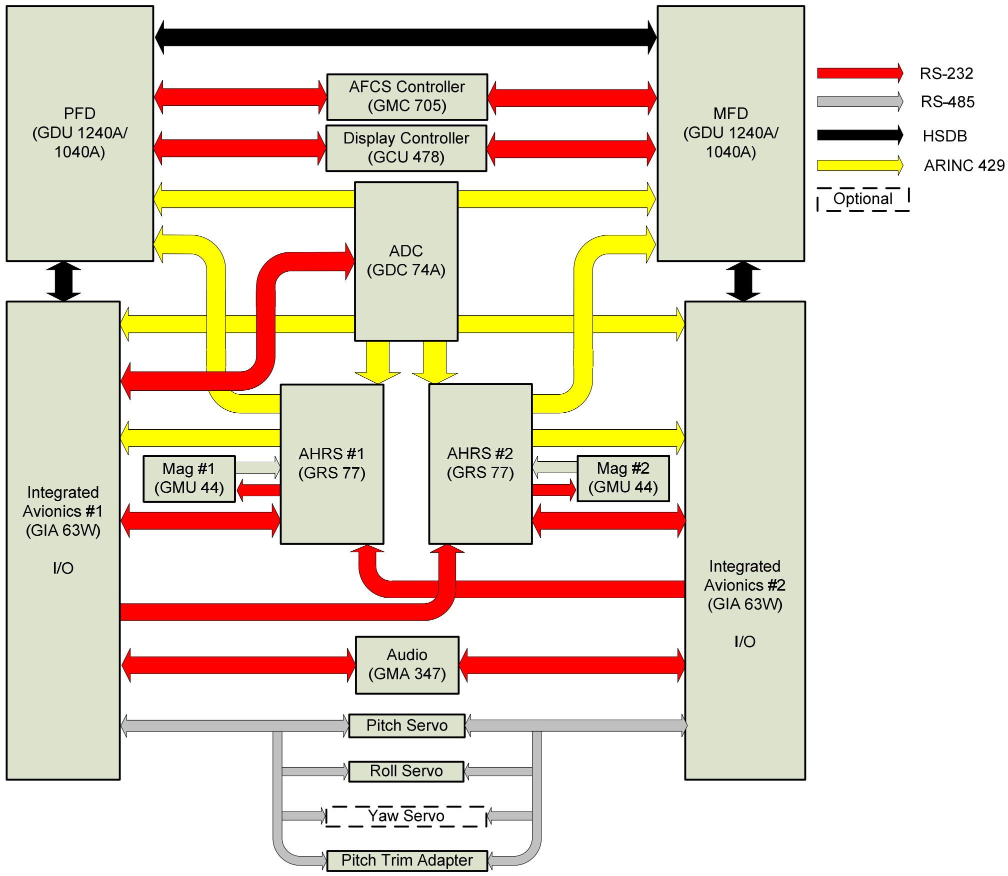


Figure 3-3. GFC 700 System Interface

3.1 FLIGHT INSTRUMENTATION

The GRS 77 AHRS, GDC 74A Air Data Computer, and GMU 44 Magnetometer provide the system with flight instrumentation data. The data consists of aircraft attitude, heading, altitude, airspeed, vertical speed, and outside air temperature information, all displayed on the PFD (the same data is displayed on the MFD in reversionary mode).

Data outputs from the GRS 77 and GDC 74A are sent directly to the PFD using ARINC 429. Additional communications paths connect the GRS and GDC 74A to GIA 63W units providing quadruple redundancy.

The GRS 77 receives GPS data from both GIAs, airspeed data from the GDC 74A, and magnetic heading from the GMU. Using these three external sources, combined with internal sensor data, the GRS accurately calculates aircraft attitude and heading (Figure 2-1).

In addition to using internal sensors, the GRS 77 uses GPS information, magnetic field data, and air data to assist in attitude/heading calculations. In normal mode, the GRS 77 relies upon GPS and magnetic field measurements. If either of these external measurements is unavailable or invalid, the GRS 77 uses air data information for attitude determination. Four GRS 77 modes of operation are available and depend upon the combination of available sensor inputs. Loss of air data, GPS, or magnetometer sensor inputs is communicated to the pilot by message advisory alerts.

3.2 GFC 700 AUTOPILOT

The GFC 700 is a fail-passive digital flight control system composed of multiple Garmin LRUs and servos. The following functions are provided by the GFC 700 in a Perspective™ installation:

- Flight Director
- Autopilot
- Pitch Trim
- Yaw Damper (optional)

3.2.1 Flight Director

The Flight Directors operate within the GIA 63Ws and use data from the GARMIN system, including air, attitude, and flight data, to calculate commands for display to the pilot and for the Autopilot. Flight director command bars and mode annunciations are sent to the PFDs through a high-speed Ethernet connection for display to the pilot and copilot. The flight director operates independently of the autopilot and allows the pilot to hand-fly the command bars if desired.

3.2.2 Autopilot

The autopilot operates within two GSA 81 servos (pitch and roll). Flight director data is processed within the servos and turned into aircraft flight control surface commands. The autopilot cannot operate unless the flight director is engaged.

3.2.3 Manual Electric Pitch Trim

When the autopilot is not engaged the pitch trim motor may be used to provide a Manual Electric Pitch Trim (MEPT) function. This allows the pilot or co-pilot to adjust pitch trim from the PITCH TRIM switch on the control stick. The MEPT trim command is routed through the GIA 63Ws where the trim speeds are scheduled to provide easier control over a wide speed or configuration range. In manual mode, the MEPT is routed through the GTA 82. Activation of the MEPT (or Manual Electric Roll Trim) does not disengage the Autopilot.

3.2.4 Yaw Damper

The yaw damper reduces Dutch roll tendencies and coordinates turns. It can operate independently of the autopilot and may be used during normal hand-flight maneuvers. A GSA 80 servo provides the control surface interface and the mode selection occurs via the GMC 705 controller.

3.3 S-TEC 55X/55SR AUTOPILOT

The Perspective™ System can interface with the S-TEC 55X/55SR Autopilot to provide the following information to the System 55X/55SR for normal operation of the autopilot:

- Cross-track deviation
- Navigation flag
- Localizer Tuned state
- Heading error
- Course error
- Glideslope deviation
- Glideslope flag
- Pre-selected altitude
- Baro-corrected altitude
- GPS Steering

The interface will allow the Perspective™ System to obtain and respond to, as needed, the following information from the S-TEC 55X/55SR:

1. **Annunciations:** All annunciations that would normally be made available to the S-TEC Remote Annunciator.
2. **Altitude Information Requests:** All requests for pre-selected altitude and baro-corrected altitude that would normally be provided to the S-TEC SA-200 Altitude Selector Alerter.

In the case of the GFC 700, both of the GIAs communicate to the servos through RS-485. In the case of the S-TEC autopilot, the #2 GIA outputs analog HSI signals to the S-TEC 55X/55SR, along with ARINC 429 roll steering, altitude data, and digital selected altitude data.

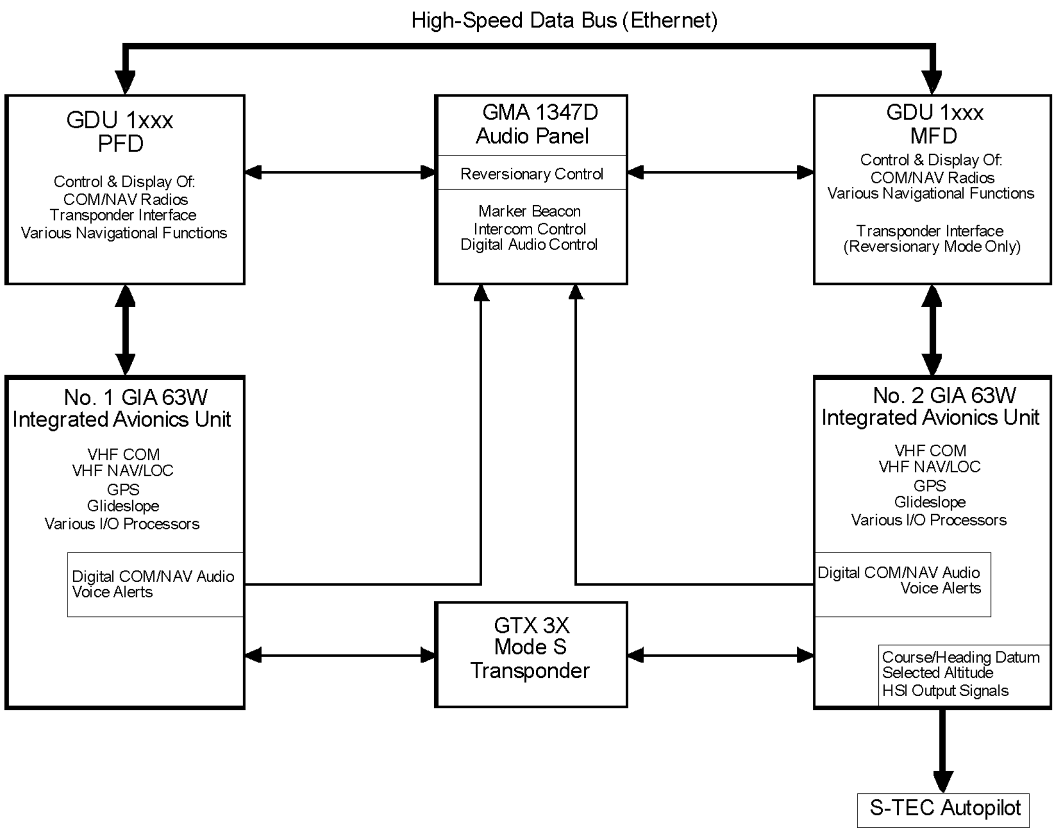


Figure 3-4. S-TEC Interface

3.4 NAVIGATION AND COMMUNICATION SYSTEM

The GIAs contain VHF COM, VHF NAV, and GPS receivers. COM and NAV audio is sent via digital audio to the GMA 347 Audio Panel. GPS information is sent to the GRS 77 AHRS and both displays for processing. The GTX 32/33 Mode S Transponder communicates with both GIAs. Transponder data is sent from the GIAs to the PFD.

SECTION 4

CONFIGURATION MODE

This section provides an overview of the configuration mode of operation. This section presumes basic familiarity with the basic operation of the Cirrus Perspective™ system.

4.1 SYSTEM OPERATION

Control and operation of the Perspective™ System and the GFC 700 occurs through the PFD, MFD, GCU 478, GMA 347, and GMC 705. See the following documents for detailed information regarding system control and operation.

- Garmin/GFC 700 Cirrus SR20/SR22/SR22T Airplane Flight Manual Supplement
- Garmin Cirrus SR20/SR22/SR22T Cockpit Reference Guide (Garmin P/N 190-00821-00)

4.2 CONFIGURATION MODE

Configuring, calibrating, and troubleshooting tasks are performed when the system is in configuration mode.

To enter the system into configuration mode:

- Press and hold the ENT key on the PFD and the rightmost softkey on the MFD and apply power. Release the keys when the words 'INITIALIZING SYSTEM' are displayed in the upper left corner of each display. The System Status Page is displayed (Figure 4-1).

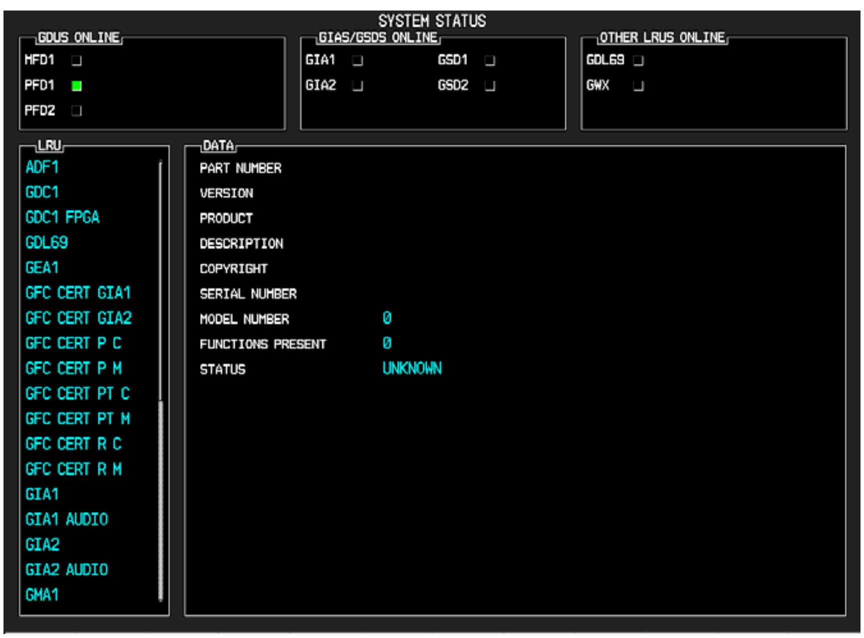


Figure 4-1. System Status Page (Configuration Mode)

Once the system is placed in configuration mode, the large and small FMS knobs are used to cycle through the different configuration pages, to change page groups, and to change pages in a group. The FMS knob is also used to perform the following:

- To activate the cursor, press the small FMS knob.
- To cycle the cursor through different data fields, rotate the large FMS knob.
- To change the contents of a highlighted data field, rotate the small FMS knob. This action displays an options menu for the particular field, or in some cases, allows the user to enter data for the field.
- To confirm a selection, press the ENT key.

To cancel a selection, press the small FMS knob. Pressing the small FMS knob again turns the cursor off. The CLR key can also be used to cancel a selection or turn the cursor off.

4.2.1 Softkeys

Some configuration pages have commands or selections that are activated by display softkeys (Figure 4-2). If a softkey is associated with a command, that command will be displayed directly above the key. A grayed-out softkey shows a command that is unavailable. A softkey that is highlighted shows the current active selection.

Figure 4-2. System Softkeys

4.3 CONFIGURATION PAGE GROUPS AND PAGES

NOTE

Certain configuration pages critical to aircraft operation and safety are "protected". The technician is unable to modify or change settings on these pages unless they are authorized and equipped to do so. They are viewable to aid in troubleshooting.

Configuration pages are grouped according to function. The active page title is displayed at the top of the screen in the center. In the bottom right corner of the screen, the current configuration page group, number of pages available in the group, and placement of the current page within the group are indicated by icons. Table 4-1 shows the order and organization of various page groups and pages shown in configuration mode. *The table is an example only; configuration pages may change depending on the specific installation requirements.*

Table 4-1. Configuration Page Groups and Pages

SYSTEM System Status Date/Time Setup Main Lighting Audio Alert Configuration System Upload File Manager Diagnostics Terminal Maintenance Log OEM Diagnostics Terminal System Configuration System Data Paths System Setup Manifest Configuration Maintenance Log	**GDU** RS-232/ARINC 429 Config GDU Status GDU Test Diagnostics Serial / Ethernet I/O Video Alert Configuration Airframe Configuration TAWS-B Setup	**GIA** RS-232/ARINC 429 Config RS-485 Configuration GIA I/O Configuration COM Setup GIA Status CAN Configuration
GEA Engine Data GEA Status GEA Configuration	**GTX** RS-232/ARINC 429 Config Transponder Configuration	**GRS** AHRS/AIR Data Input GRS/GMU Calibration
ADC Configuration ADC Configuration GDC Configuration	**GMA** GMA Configuration	**GDL** GDL69 Configuration
RMT Remote Controller Status	**OTHER** S-TEC®	**CAL** Fuel Tank Calibration Flaps & Trim Calibration HSCM Calibration

4.4 SECURE DIGITAL (SD) CARDS

Software files are uploaded into the system using a secure digital (SD) data card. The card contains all necessary files to load software and configuration settings to all LRUs. Basically, all software and configuration parameters are pre-determined by Garmin and/or Cirrus. During removal and replacement of LRUs, software and configuration files may need to be reloaded (refer to Section 7). *It is important to use the correct card part number because each card part number defines all files found on the card for a specific installation except for certain configuration settings such as the aircraft registration number (N#) which must be entered manually.*

Be careful when using the card during maintenance. The system is designed to immediately initialize the card upon power-up. Pay attention to all on-screen prompts to avoid possible loss of data.

The GDU data card slots accept secure digital (SD) cards and are located on the top right portion of the display bezels (Figure 4-3). Each display bezel has two card slots, top and bottom. The top slot is for SD cards containing aviation database and system software updates and supplemental database storage files.

NOTE

The SD card label should be on the left side when inserted into the display. Do not force the card if there is resistance. Remove and reinsert gently.

To install an SD card:

Turn the system off. Insert the SD card in the SD card slot, pushing the card in until the spring latch engages. The front of the card should remain flush with the face of the display bezel.

To remove an SD card:

Gently press on the SD card to release the spring latch and eject the card.

Figure 4-3. GDU Bezel SD Card Slots

4.5 'SET' AND 'ACTIVE' COMMANDS

The SET and ACTIVE commands which are displayed on various configuration pages (Figure 4-4) are used for setting system input/output conditions.

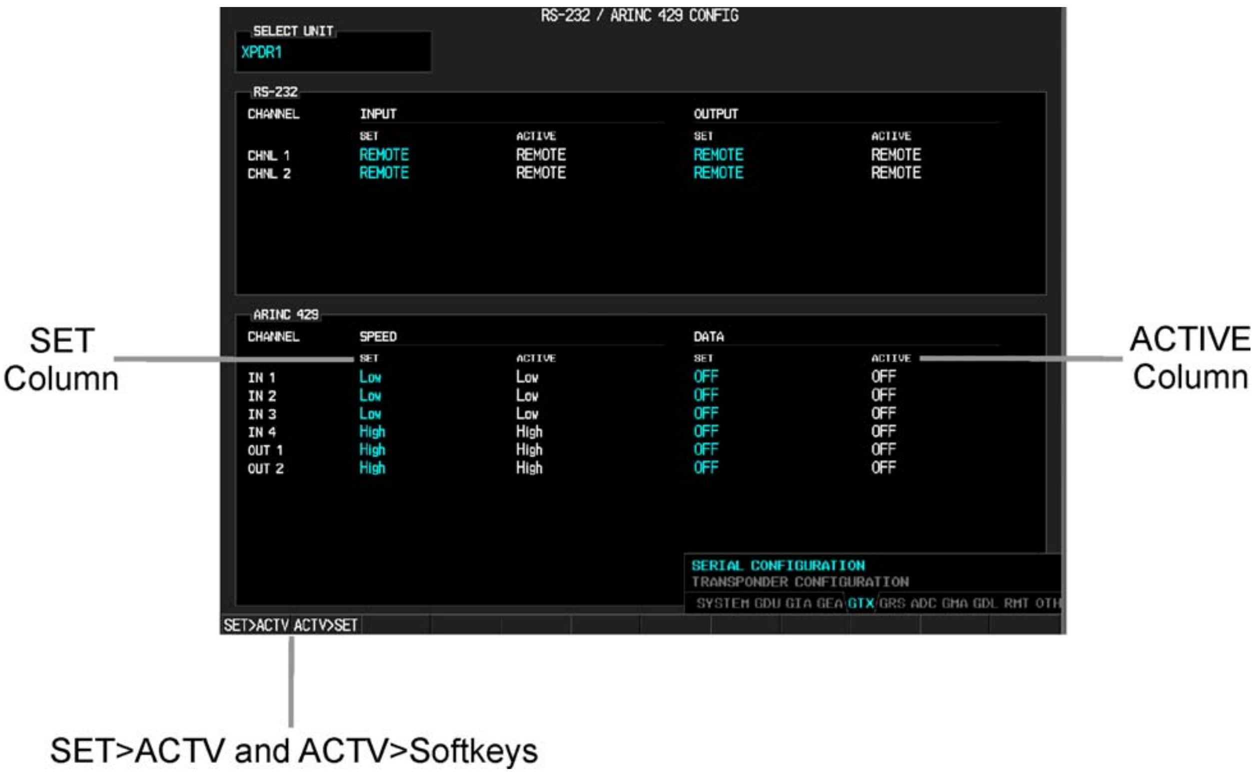


Figure 4-4. SET and ACTIVE Softkeys and Columns

4.5.1 SET and ACTIVE Softkeys

Look for inequalities (configuration mismatches) between the SET and ACTIVE columns during troubleshooting. Certain problems can be resolved by pressing the SET>ACTV softkey which reloads settings to the specific LRU (this can also be accomplished by reloading the configuration files for the LRU using the system software loader card). ***Use the ACTV>SET softkey with care. If an improperly configured unit is installed, this softkey causes the wrong configuration to replace the correct one.***

Definitions:

SET—refers to a setting or group of settings that reside in the PFDs internal memory and/or master configuration module.

ACTIVE—refers to a current setting stored and used in a LRU. LRUs store the ‘active’ settings within internal memory.

Data can be manually copied from one column to the other by using the following two softkeys:

SET>ACTV (Set to Active)— sends the information in the SET column (data stored in the master configuration module) to the ACTV column (data used by the LRU).

ACTV>SET (Active to Set)—copies the current settings of the LRU to the master configuration module as SET items.

4.6 CONFIGURATION STATUS

When configuration settings are changed, the following configuration and/confirmation prompts are displayed.

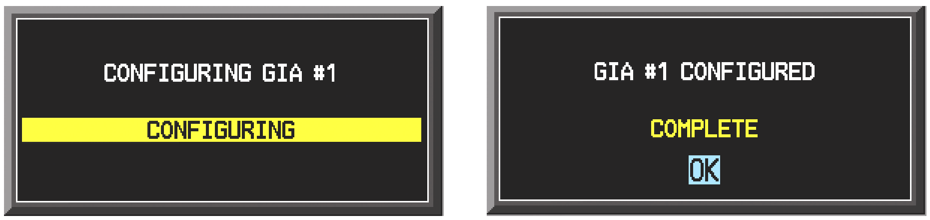


Figure 4-5. Configuration/Confirmation Prompts

4.7 DATA TRANSMISSION INDICATORS

Several configuration pages use an indicator light system to show discrete (ON/OFF) data and/or hardware component status. Unless otherwise noted, the following applies to all configuration page status indicators:

- Green—expected data is successfully received and is ON. A green light can also indicate that the parameter/component is working correctly.
- Red—expected data is not received. A red light can also indicate that a parameter/component is invalid.
- Black—expected data is successfully received and is OFF, or no data is expected. A black light can also indicate that the parameter/component is not responding.

Figure 4-6. Data Transmission Indicators

A blank ACTIVE column displays the loss of communication between the display and a specific LRU (Figure 4-7).

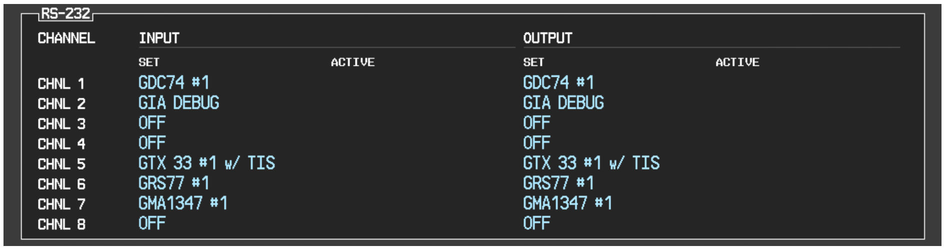


Figure 4-7. Loss of Communication Indication

Blank Page

SECTION 5
TROUBLESHOOTING

This section provides troubleshooting guidance for failed LRU's.

5.1 CIRRUS PERSPECTIVE™ ALERTING SYSTEM

5.1.1 Display Fields

A red X through a display field (such as COM frequencies, NAV frequencies, or engine data) indicates a display field which is not receiving valid data (see Figure 5-1).

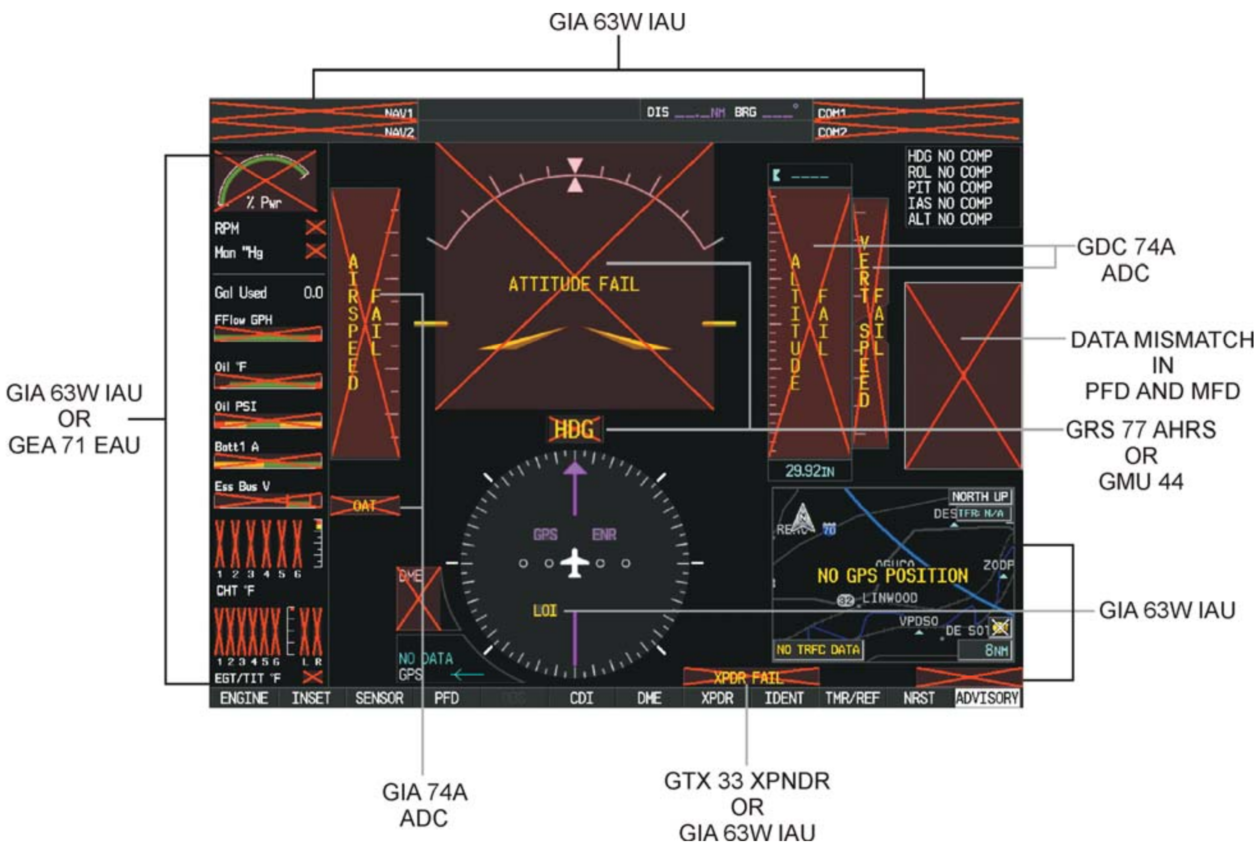
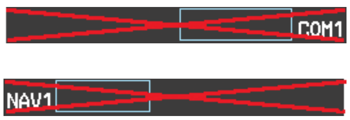


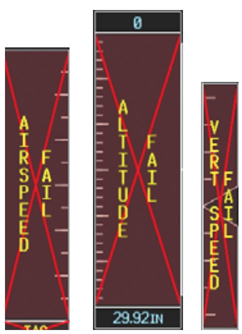
Figure 5-1. Invalid Display Fields

5.1.2 System Annunciation Troubleshooting

Annunciation	Associated LRU	Solution
NAV1 or COM1 	**GIA1**	• Check PFD Alert Window for GIA1 configuration, software or failed data path error messages. Correct any errors before proceeding. • Swap GIA1 and GIA2 and reconfigure. – If problem follows GIA1, replace GIA1. • Check Ethernet interconnect from GIA1 to PFD and unit connector pins for faults. • If problem persists, replace PFD.
NAV2 or COM2 	**GIA2**	• Check PFD Alert Window for GIA2 configuration, software or failed data path error messages. Correct any errors before proceeding. • Swap GIA1 and GIA2 and reconfigure. – If problem follows GIA2, replace GIA2. • Check Ethernet interconnect from GIA2 to MFD and unit connector pins for faults. • If problem persists, replace MFD.

System Annunciation Troubleshooting (continued)

Annunciation	Associated LRU	Solution
GPS INTEG or Time  	**GIA1 or 2**	• Check PFD Alert Window for GIA1/2 configuration, software or failed data path error messages. Correct any errors before proceeding. • Make sure the aircraft is located where the GPS antennas have a clear view of the sky. • Check for possible external interference to the GPS receivers. 1. Make sure a cell phone or a device using cell phone technology is not turned on (even in a monitoring state) in the cabin. 2. Turn to the MFD AUX – GPS STATUS page and check the GPS strength bars on both GPS receivers. If the signal strength levels are erratic, disappear and reappear rapidly, or switch between a solid and hollow bar, there could be an external device interfering with the GPS receivers. Turn off any devices that radiate a signal in the area or move the aircraft to another location to remove the interference. 3. Make sure the aircraft is not parked in close proximity to a hanger with the doors open and equipped with a GPS repeater. • Make sure the GIA's are online by checking for a green checkmark next to the GIA on the MFD Aux – System Status page. • If a GIA is not online (a red-X will be present instead of a green check mark), check for power input faults. • Refer to the GIA GPS troubleshooting section for additional actions.

Annunciation	Associated LRU	Solution
XPDR FAIL 	**GTX 32 or Optional GTX 33**	• Check PFD Alert Window for GIA1/2 and GTX 32/33 configuration, software or failed data path error messages. Correct any errors before proceeding. • Perform a SET>ACTV configuration reset on the GTX Transponder Configuration page for each installed GTX. • For GTX 33 transponders, make sure the aircraft registration is entered in the GTX Transponder Configuration page. • Check the GIA and GTX racks for connector pin faults (pushed back or bent) on the RS-232 interconnect lines. • Replace the GTX 32/33.
AIRSPEED FAIL, ALTITUDE FAIL, VERT SPEED FAIL  	**GDC 74A #1 or Optional #2**	• Check PFD Alert Window for PFD, MFD or GDC configuration, software or failed data path error messages. Correct any errors before proceeding. • Make sure the GDC's are online by checking for a green checkmark next to the GDC on the MFD Aux – System Status page. 1. If the GDC is not online (a red-X will be present instead of a green check mark), check for wiring/power faults and GDC connector security. 2. Replace the GDC 74A. • Inspect GDC 74A pitot/static ports and plumbing for blockage. • Replace the GDC 74A configuration module. • For TAS failures only, replace the GTP 59.
OAT  **and** **TAS** 	**GTP 59**	• Check OAT probe wiring, probe, and connectors for faults or damage. • Replace GDC 74A config module and pigtail harness. • Replace the GTP 59. If problem remains, replace GDC 74A.

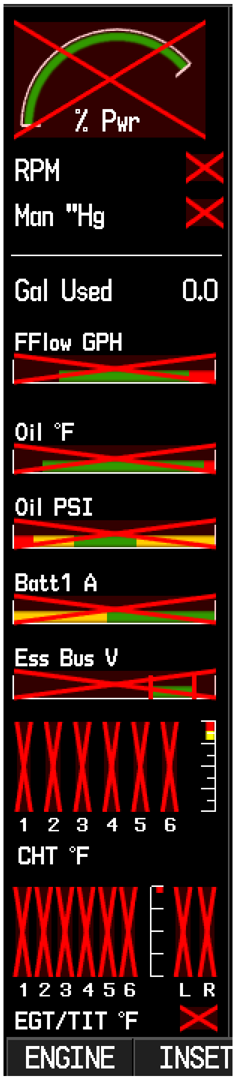
System Annunciation Troubleshooting (continued)

Annunciation	Associated LRU	Solution
ATTITUDE FAIL 	**GRS 77 #1 or Optional #2**	• Make sure a cell phone or a device using cell phone technology is not turned on (even in a monitoring state) in the cabin. • Check PFD Alert Window for PFD, MFD or GRS configuration, software or failed data path error messages. Correct any errors before proceeding. • For an attitude failure while parked, check the following: – Is aircraft stationary if GPS is not available? Aircraft movement (rocking the wings or moving the tail) may cause the attitude and heading to fail if it believes the aircraft is in motion without GPS input. – Check to see if the GPS has acquired at least four satellites, has a 3D navigation solution, and a DOP of less than 5.0. • Check for metal objects (tool boxes, power carts, nearby large steel structures, etc.) around the aircraft that could be interfering with the magnetometer. • Cycle GRS 77 power to restart initialization. • Check the GRS 77 connecter for security and that proper wire harness strain relief is provided. • Check to see if the GRS 77 is fastened down tightly in its mounting rack and that the mounting rack is not loose (CAUTION - do not loosen the mounting rack hardware to the airframe shelf or the aircraft will need to be re-leveled and the PITCH/ROLL OFFSET procedure performed). • Perform an Engine Run-Up Test to check if engine vibration is causing the GRS 77 to go offline. • Replace the GRS 77. • If problem persists, replace the GRS 77 configuration module. • Contact Garmin Aviation Product Support if condition continues after replacing the GRS 77 and/or config module.

System Annunciation Troubleshooting (continued)

Annunciation	Associated LRU	Solution
HDG FAIL 	**GRS 77 #1& GMU 44 #1 or Optional GRS77 #2 & GMU #2**	• Check PFD Alert Window for PFD, MFD or GRS configuration, software or failed data path error messages. Correct any errors before proceeding. • Check for metal objects (tool boxes, power carts, nearby large steel structures, etc.) around the aircraft that could be interfering with the magnetometer. • Make sure a cell phone or a device using cell phone technology is not turned on (even in a monitoring state) in the cabin. • Cycle power after moving aircraft away from metal objects to determine if metal objects were the source of the interference. Allow up to five minutes for the heading to reinitialize. • Is the aircraft stationary if GPS is not available? Aircraft movement (rocking the wings or moving the tail) may cause the attitude and heading to fail if it believes the aircraft is in motion without GPS input. • Perform a Magnetometer Interference Test to check for interference from onboard electrical system components (e.g. NAV lights). Pay attention to any new electrical devices that have been installed since the aircraft was new. Correct any discrepancies that do not allow this test to pass before continuing. • Make sure the GRS 77 and GMU 44 connectors are secure. • Check the wiring and any inline connectors between the GRS and GMU for faults. • Recalibrate the GMU 44. • Replace the GMU 44. • If problem persists, replace the GRS 77.

System Annunciation Troubleshooting (continued)

Annunciation	Associated LRU	Solution
Engine/Airframe Sensors 	**GEA 71 & GIA 63W**	• Check PFD Alert Window for GIA1/2 or GEA configuration, software or failed data path error messages. Correct any errors before proceeding. • On the PFD in Configuration Mode, turn to the GEA STATUS page and make sure the GEA internal power supply, configuration, and calibration status boxes are green. – If the internal power supply box is red, check for shorted engine/airframe sensors that receive 5V, 10V, or 12V power from the GEA (tach sensor, MAP sensor, Fuel Flow sensor, oil pressure sensor and pitot heat sensor). – The configuration and calibration boxes should be green. If the calibration status boxes are red, replace the GEA 71. • Make sure the internal, external, and reference voltages listed in the Main Analog and I/O Analog boxes are not dashed out (this does not include Aircraft Power 1 and 2). If any voltages are dashed out, replace the GEA. • Check the MFD AUX – SYSTEM STATUS page if the GEA is online (green checkmark on the AUX – SYSTEM STATUS page is present). If GEA is not online, (red-X is present), make sure the unit is receiving power at the GEA rack connector. • Replace the GEA 71. • If problem persists, check the GIA/GEA interconnect wiring and unit connector pins for faults.

5.2 Messages & Annunciations

NOTE

See Appendix A in the Perspective™ System Pilot's Guide for a list of all messages and annunciations not covered in this Line Maintenance Manual.

Figure 5-2. Messages & Annunciations

In normal mode, the system displays a variety of system messages and/or annunciations. System messages are normally presented on the PFD and can be viewed by pressing the bezel key located below the flashing annunciation. This section provides a listing of possible messages, alerts, and annunciations. Aircraft specific alerts are not covered in this manual.

5.3 System Status Page (MFD—Normal Mode)

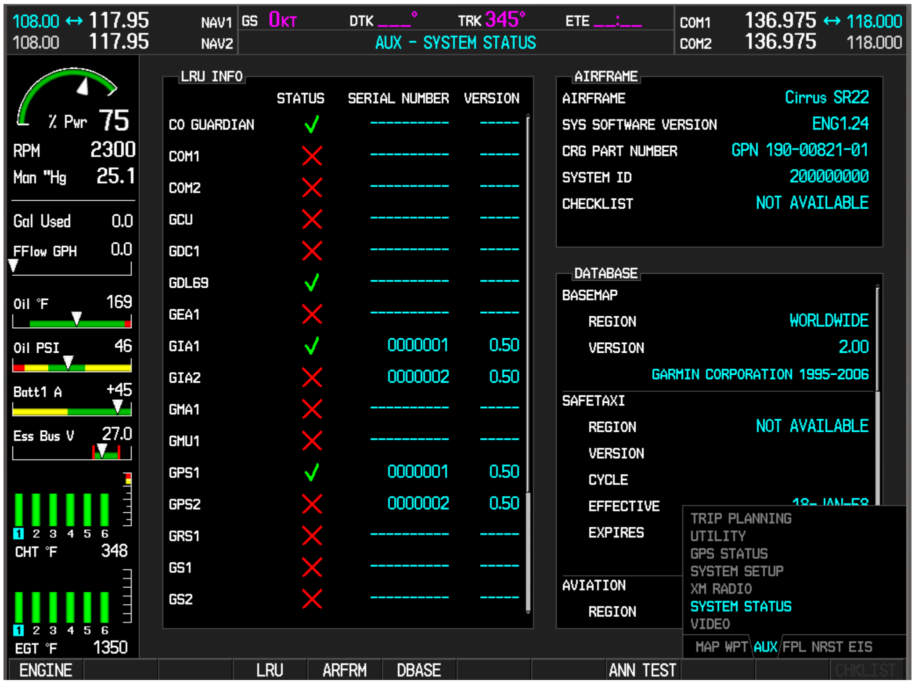


Figure 5-3. System Status Page (AUX Group)

The AUX – SYSTEM STATUS page on the MFD displays LRU health status when the system is in normal mode.

Failed Path Messages

A 'FAILED PATH' message indicates that a data path connected to the GDU (PFD or MFD) or the GIA 63W (1 or 2) has failed. This 'FAILED PATH' message is triggered by a timeout of any digital channel. The channels that are checked are displayed on the following pages in configuration mode:

1. GDU RS-232 / ARINC 429 CONFIG (PFD and MFD)
2. GIA RS-232 / ARINC 429 CONFIG (GIA1 and GIA2)
3. GIA CAN / RS-485 CONFIGURATION (GIA1 and GIA2)

Once the FAILED PATH message has been triggered, it remains on the list of messages until the next power cycle. This latching was implemented so that the message would remain through the end of the flight during intermittent failures (to alert the maintenance crew). This also keeps the crew from having to repeatedly acknowledge messages in the case of intermittent failures.

The box color next to each channel indicates the current status of the channel:

- Red = data path is known to be failed.
- Black = data path status is unknown.
- Green = data path is known to be good.

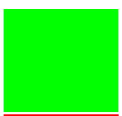
The applicable data paths can be verified by viewing the configuration mode pages listed below.

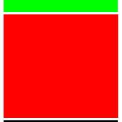
5.4 Data Path Indications on the Main and GIA Configuration Pages

NOTE

Pre GDU 9.11 software uses solid green, black, and red indicator boxes on the configuration pages. Post GDU 9.11 software uses green check, red x, black N/A, and yellow ? indicator boxes on the configuration pages. Although the manual uses pre GDU 9.11 boxes in the troubleshooting tables, the technician should be aware of the differences.

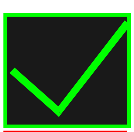
Pre GDU 9.11 Software:

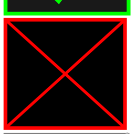

Data Path is Good

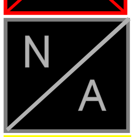

Data Path Has Failed


Data Path Status is Unknown

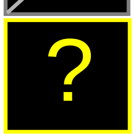
Post GDU 9.11 Software:


Data Path is Good


Data Path Has Failed



Data Path is not Applicable



Data Path Status is Unknown

In addition to failure messages, the data path can be checked by observing the indication boxes on the GDU and GIA Configuration Pages. The status of the channel is indicated by the following colors:

(Pre GDU 9.11 Software):

- Red = data path has failed
- Black = data path status is unknown
- Green = data path is good

(Post GDU 9.11 Software):

- Red X = data path has failed
- Green check mark = data path is good
- N/A = data path status is not applicable
- ? = data path is unknown

5.4.1 System Data Paths

In addition to troubleshooting via the GDU and GIA Configuration Pages, the System Data Path Configuration Page displays port status and information. The System Data Paths Configuration page (Figures 5-4 through 5-7) displays the following data when the A429, CAN, RS-232, or RS-485 data path softkey is selected:

A table containing one row for each configured LRU with the following information per row, ordered from left to right:

- A text field indicating the LRU name in the column
- A text field indicating the channel name
- A status indicator showing:
  - An N/A indication if the monitor is on and data path status is not applicable
  - A positive indication if the monitor is on and data path status is "OK"
  - A negative indication if the monitor is on and data path status is "FAIL"
  - An unknown indication if the monitor is off or the monitor is "ON" and data path status is "UNKNOWN"
- A text field indicating the port monitor status:
  - "ON" if the monitor is turned on
  - "OFF" if the monitor is turned off

- A text field indicating the following port status:
    - "OK" if the port is communicating
    - "FAIL" if the port is not communicating
    - "N/A" if the port is not applicable
    - "UNKNOWN" if the port status is unknown

Figure 5-4. A429 Data Path Page

Figure 5-5. CAN Data Path Page

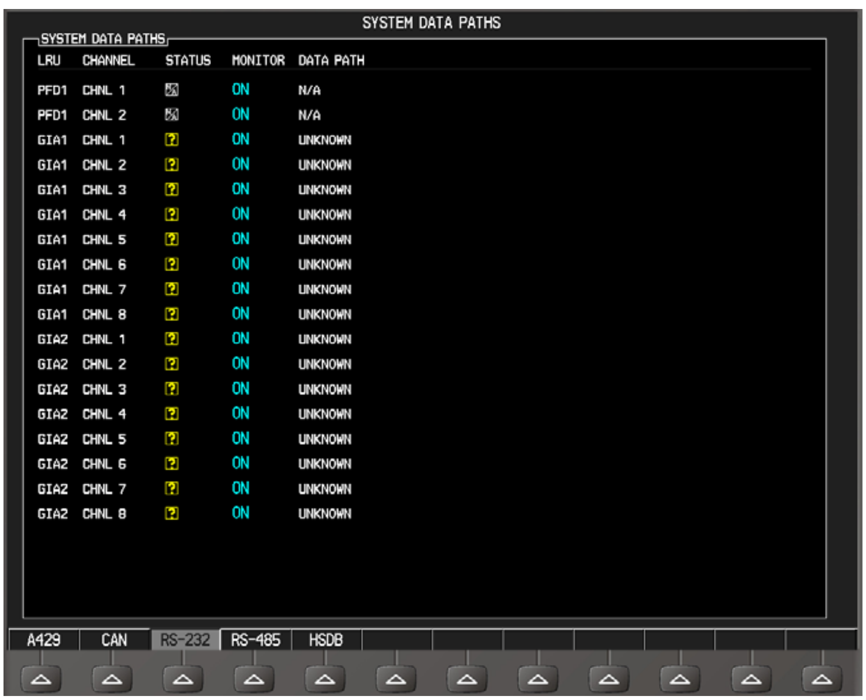


Figure 5-6. RS-232 Data Path Page

Figure 5-7. RS-485 Data Path Page

The System Data Paths Configuration page displays the following data when the HSDB data path softkey is selected:

- A table containing one row for each configured LRU with the following data per row, ordered from left to right:
  - o A text field indicating the LRU name in the column
  - o A drop down selectable field indicating the expected LRU for each HSDB port
  - o A white text field indicating the current LRU for each HSDB port
  - o A status indicator for each HSDB port:
    - ▪ An N/A indicator if the expected LRU is configured to none and there is no actual LRU online.
    - ▪ A positive indicator if the expected LRU matches actual LRU online
    - ▪ A negative indicator if the expected LRU does not match actual LRU online

Figure 5-8. HSDB Data Path Page

5.5 Troubleshooting Tables

GDU RS-232/ARINC 429 Configuration Page (PFD1/2 and MFD)

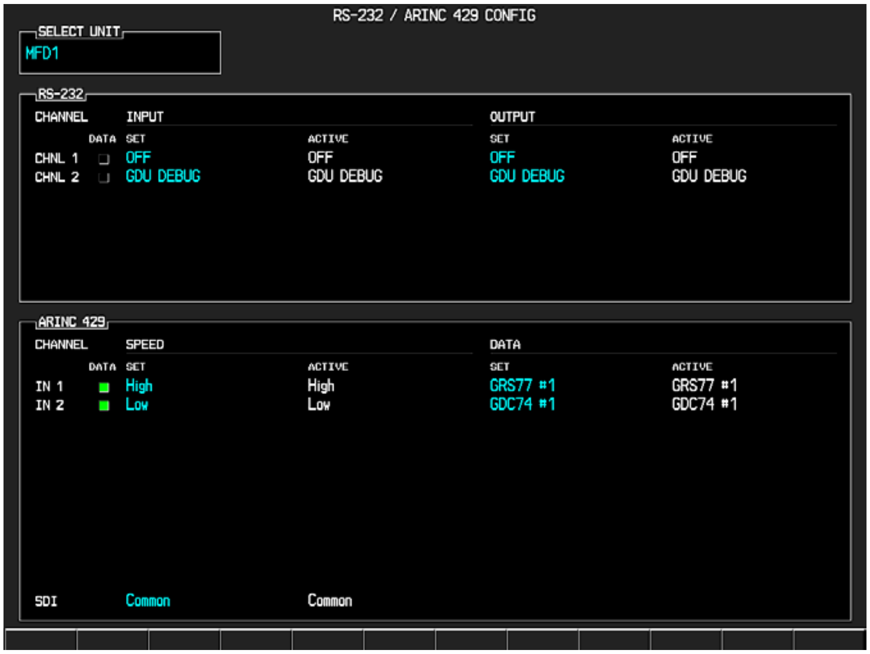


Figure 5-9. Main RS-232/ARINC 429 Configuration Page

The Main RS-232/ARINC 429 Configuration Page (Figure 5-9) troubleshooting tables show channel, LRU, status indication, and troubleshooting helps. Channel assignments with their associated LRUs differ depending on the specific aircraft configuration. The tables are only examples.

GDU RS-232 / ARINC 429 CONFIG Page

PFD RS-232

Channel	LRU	Indicator	Status
CHNL 1	GCU 478		PFD/GCU 478 data path is functioning correctly.
			PFD/GCU 478 data path is not functioning correctly. • Check PFD Alert Window for PFD or GCU configuration or software error messages. Correct any errors before proceeding. Make sure the GCU is powered on by pressing the “ANN TEST” softkey on the MFD AUX - SYSTEM STATUS page to see if the key indicators turn on. • If GCU will not power on, remove unit and make sure power and ground are present at the GCU connector. – If power or ground is not present, troubleshoot aircraft wiring for faults. If power and ground are present, check the PFD and GCU connector for damaged or pushed back pins. • Swap PFD and MFD to see if the problem is in the PFD. – Replace original PFD if box turns green after swapping displays. • Replace the GCU.
			PFD/GCU 478 data path functionality is unknown. Reload PFD configuration file.
CHNL 2	GMC 705		PFD/GMC 705 data path is functioning correctly.
			PFD/GMC 705 data path is not functioning correctly. • Check PFD Alert Window for PFD or GMC configuration or software error messages. Correct any errors before proceeding. Make sure the GMC is powered on by pressing the “ANN TEST” softkey on the MFD AUX - SYSTEM STATUS page to see if the key indicators turn on. • If GMC will not turn on, remove unit and make sure power and ground are present at the GMC connector. – If power or ground is not present, troubleshoot aircraft wiring for faults. If power and ground are present, check the PFD and GMC connector for damaged or pushed back pins. • Swap PFD and MFD to see if the problem is in the PFD. Replace original PFD if box turns green after swapping displays. Replace the GMC.
			PFD/GMC 705 data path functionality is unknown. Reload PFD configuration file.

PFD ARINC 429

<table>
<tr><th>Channel</th><th>LRU</th><th>Indicator</th><th>Status</th></tr>
<tr><td rowspan="3">IN 1</td><td rowspan="3">GRS 77 #1</td><td></td><td>PFD/GRS 77 #1 data path is functioning correctly.</td></tr>
<tr><td></td><td>PFD/GRS 77 #1 data path is not functioning correctly.
• Check PFD Alert Window for PFD or GRS77 configuration or software error messages. Correct any errors before proceeding. Make sure the GRS77 #1 status is OK using the AUX – SYSTEM STATUS PAGE on the MFD. If there is a red-x, troubleshoot why the GRS is offline before proceeding. Make sure the GRS77 #1 connecter is secure and proper wire harness strain relief is provided.
• Swap GRS77#1 and GRS77 #2 (if a GRS77 #2 is installed) to see if the problem is in the original GRS77 #1.
– Replace original GRS77 #1 if box turns green after swapping units.
• Swap PFD and MFD to see if the problem is in the PFD.
– Replace original PFD if box turns green after swapping displays.
• Check the PFD/GRS 77 #1 interconnect wiring and unit connector pins for faults.
• Replace GRS 77 #1.</td></tr>
<tr><td></td><td>PFD/GRS 77 #1 data path functionality is unknown. Reload PFD configuration file.</td></tr>
<tr><td rowspan="3">IN 2</td><td rowspan="3">GDC 74 #1</td><td></td><td>PFD/GDC 74A #1 data path is functioning correctly</td></tr>
<tr><td></td><td>PFD/GDC 74A #1 data path is not functioning correctly.
• Check PFD Alert Window for PFD or GDC74 configuration or software error messages. Correct any errors before proceeding. Make sure the GDC 74 #1 status is OK using the System Status Page on the MFD. If there is a red-x, troubleshoot why the GDC is offline before proceeding.
• Swap PFD and MFD to see if the problem is in the original PFD.
– Replace original PFD if box turns green after swapping displays.
• Check the PFD/GDC 74 #1 interconnect wiring and unit connector pins for faults. Replace GDC 74 #1 if problem remains.</td></tr>
<tr><td></td><td>PFD/GDC 74A #1 data path functionality is unknown. Reload PFD configuration file.</td></tr>
</table>

MFD RS-232

<table>
<tr><th>Channel</th><th>LRU</th><th>Indicator</th><th>Status</th></tr>
<tr><td rowspan="3">CHNL 1</td><td rowspan="3">GCU 478</td><td></td><td>MFD/GCU 478 data path is functioning correctly.</td></tr>
<tr><td></td><td>MFD/GCU 478 data path is not functioning correctly.
• Check PFD Alert Window for MFD or GCU configuration or software error messages. Correct any errors before proceeding.
• Make sure the GCU is powered on by pressing the “ANN TEST” softkey on the MFD AUX - SYSTEM STATUS page to see if the key indicators turn on.
• If GCU will not power on, remove unit and make sure power and ground are present at the GMC connector.
– If power or ground is not present, troubleshoot aircraft wiring for faults.
– If power and ground are present, check the MFD and GCU connectors for damaged or pushback pins.
• Swap PFD and MFD to see if the problem is in the original MFD.
– Replace original MFD if box turns green after swapping displays.
• Replace the GCU 478.</td></tr>
<tr><td></td><td>MFD/GCU 478 data path functionality is unknown. Reload MFD configuration file.</td></tr>
</table>

<table>
<tr><td rowspan="3">CHNL 2</td><td rowspan="3">GMC 705</td><td></td><td>MFD/GMC 705 data path is functioning correctly.</td></tr>
<tr><td></td><td>MFD/GMC 705 data path is not functioning correctly.
• Check PFD Alert Window for MFD or GMC configuration or software error messages. Correct any errors before proceeding.
• Make sure the GMC is powered on by pressing the “ANN TEST” softkey on the MFD AUX - SYSTEM STATUS page to see if the key indicators turn on.
• If GMC will not come on, remove unit and make sure power and ground are present at the GMC connector.
– If power or ground is not present, troubleshoot aircraft wiring for faults.
– If power and ground are present, check the MFD and GMC connector for damaged or pushback pins.
• Swap PFD and MFD to see if the problem is in the PFD.
– Replace original MFD if box turns green after swapping displays.
• Replace the GMC.</td></tr>
<tr><td></td><td>MFD/GMC 705 data path functionality is unknown. Reload MFD configuration file.</td></tr>
</table>

MFD ARINC 429

<table>
<tr><th>Channel</th><th>LRU</th><th>Indicator</th><th>Status</th></tr>
<tr><td rowspan="3">IN 1</td><td rowspan="3">GRS 77 #2 (if equipped)</td><td></td><td>MFD/GRS 77 #2 data path is functioning correctly.</td></tr>
<tr><td></td><td>MFD/GRS 77 #2 data path is not functioning correctly.
• Check PFD Alert Window for MFD or GRS77 configuration or software error messages. Correct any errors before proceeding.
• Make sure the GRS77 #2 status is OK using the AUX – SYSTEM STATUS PAGE on the MFD. If there is a red-x, troubleshoot why the GRS is offline before proceeding.
• Make sure the GRS77 #2 connecter is secure and proper wire harness strain relief is provided.
• Swap GRS77 #1 and GRS77 #2 to see if the problem is in the original GRS77 #2.
– Replace original GRS77 #2 if box turns green after swapping units.
• Swap PFD and MFD to see if the problem is in the MFD.
– Replace original MFD if box turns green after swapping displays.
• Check the MFD/GRS 77 #2 interconnect wiring and unit connector pins for faults.
• Replace GRS 77 #2.</td></tr>
<tr><td></td><td>MFD/GRS 77 #2 data path functionality is unknown. Reload MFD configuration file.</td></tr>
</table>

<table>
<tr><td rowspan="3">IN 2</td><td rowspan="3">GDC 74A #2
(if
equipped)</td><td></td><td>MFD/GDC 74A #2 data path is functioning correctly</td></tr>
<tr><td></td><td>MFD/GDC 74A #2 data path is not functioning correctly.
• Check PFD Alert Window for PFD or GDC74 configuration or software error messages. Correct any errors before proceeding.
• Make sure the GDC 74 #2 status is OK using the System Status Page on the MFD. If there is a red-x, troubleshoot why the GDC is offline before proceeding.
• Swap PFD and MFD to see if the problem is in the original MFD.
– Replace original MFD if box turns green after swapping displays.
• Check the MFD/GDC 74 #2 interconnect wiring and unit connector pins for faults.
• Replace GDC 74 #2 if problem remains.</td></tr>
<tr><td></td><td>MFD/GDC 74A #2 data path functionality is unknown.
Reload MFD configuration file.</td></tr>
</table>

GIA RS-232 / ARINC 429 CONFIG Page

GIA1 RS-232

<table>
<tr><th>Channel</th><th>LRU</th><th>Indicator</th><th>Status</th></tr>
<tr><td rowspan="3">CHNL 1</td><td rowspan="3">GDC 74A #1</td><td>Green box</td><td>GIA1/GDC 74A #1 data path is functioning correctly.</td></tr>
<tr><td>Red box</td><td>GIA1/GDC 74A #1 data path is not functioning correctly.
• Check PFD Alert Window for GIA or GDC configuration or software error messages. Correct any errors before proceeding.
• Make sure the GDC 74 #1 status is OK using the AUX – SYSTEM STATUS page on the MFD. If there is a red-x, troubleshoot why the GDC is offline before proceeding.
• Swap GIA1 and GIA2, reconfigure both GIA's at their new locations to see if the problem is in the original GIA1.
– Replace original GIA1 if box turns green after swapping units.
• Check the GIA1/GDC 74#1 interconnect wiring and unit connector pins for faults.
• Replace GDC 74#1 if problem remains.</td></tr>
<tr><td>Black box</td><td>GIA1/GDC 74A #1 data path functionality is unknown. Reload GIA1 configuration files.</td></tr>
<tr><td>CHNL 2</td><td>GRS 77 #2 (output only)</td><td>Black box</td><td>GIA1/GRS 77 #2 output data path is not monitored. A black box is normal.</td></tr>
</table>

CHNL 4	Recoverable Data Module (RDM)		GIA1/RDM data path is functioning correctly.
			GIA1/RDM data path is not functioning correctly. • Check PFD Alert Window for GIA or RDM configuration or software error messages. Correct any errors before proceeding. • Swap GIA1 and GIA2. Reconfigure both GIA's at their new locations to see if the problem is in the original GIA1. – Replace original GIA1 if box turns green after swapping units. • Check the GIA1/RDM interconnect wiring and connector pins for faults. Replace RDM if problem remains.
			GIA1/RDM output data path is not monitored. A black box is normal
CHNL 5	GTX 32/33 #1		GIA1/GTX 32/33 #1 data path is functioning correctly.
			GIA1/GTX 32/33 #1 data path is not functioning correctly. • Check PFD Alert Window for GIA or GTX configuration or software error messages. Correct any errors before proceeding. • Swap GIA1 and GIA2. Reconfigure both GIA's at their new locations to see if the problem is in the original GIA1. – Replace original GIA1 if box turns green after swapping units. • Check the GIA1/GTX 33 #1 interconnect wiring and connector pins for faults. • Replace GTX 33 #1 if problem remains.
			GIA1/GTX 32/33 #1 data path functionality is unknown. Reload GIA1 configuration files.

GIA1 RS-232 (continued)

Channel	LRU	Indicator	Status
CHNL 6	GRS 77 #1	Green	GIA1/GRS 77 #1 data path is functioning correctly.
		Red	GIA1/GRS 77 #1 data path is not functioning correctly. • Check PFD Alert Window for GIA or GRS configuration or software error messages. Correct any errors before proceeding. • Make sure the GRS77 #1 status is OK using the AUX - SYSTEM STATUS PAGE on the MFD. If there is a Red-X, troubleshoot why the GRS is offline before proceeding. • Make sure the GRS77 #1 connecter is secure and proper wire harness strain relief is provided. • Swap GIA1 and GIA2, reconfigure both GIA's at their new locations to see if the problem is in the original GIA1. – Replace original GIA1 if box turns green after swapping units. • Swap GRS77 #1 and GRS77 #2 (if a GRS77 #2 is installed) to see if the problem is in the original GRS77 #1. – Replace original GRS77 #1 if box turns green after swapping units. • Check the GIA1/GRS 77 #1 interconnect wiring and unit connector pins for faults. • Replace GRS 77 #1.
		Black	GIA1/GRS 77 #1 data path functionality is unknown. Reload GIA1 configuration files.

GIA1 RS-232 (continued)

<table>
<tr><th>Channel</th><th>LRU</th><th>Indicator</th><th>Status</th></tr>
<tr><td rowspan="3">CHNL 7</td><td rowspan="3">GMA 347*</td><td></td><td>GIA1/GMA 347 data path is functioning correctly.</td></tr>
<tr><td></td><td>GIA1/GMA 347 data path is not functioning correctly.
• Check PFD Alert Window for GIA or GMA configuration or software error messages. Correct any errors before proceeding.
• Make sure the GMA 347 status is OK using the AUX - SYSTEM STATUS PAGE on the MFD. If there is a Red-X, troubleshoot why the GRS is offline before proceeding.
• Swap GIA1 and GIA2. Reconfigure both GIA’s at their new locations to see if the problem is in the original GIA1.
– Replace original GIA1 if box turns green after swapping units.
• Check the GIA1/GMA 347 interconnect wiring and unit connector pins for faults.
• Replace GMA 347.</td></tr>
<tr><td></td><td>GIA1/GMA 347 data path functionality is unknown. Reload GIA1 configuration files.</td></tr>
</table>

NOTE

* - The path is identified by the Cirrus Perspective™ System as GMA 1347#1 on the GIA RS-232/RS-485 CONFIG page.

GIA1 ARINC 429

Channel	LRU	Indicator	Status
IN 1	FIKI Optional Stall Warning Computer		GIA1/FIKI Stall Warning Computer data path is functioning correctly.
			GIA1/FIKI Stall Warning Computer data path is not functioning correctly. • Check PFD Alert Window for GIA or FIKI Stall Warning Computer configuration or software error messages. Correct any errors before proceeding. • Make sure the GDC 74A #1 status is OK using the AUX – SYSTEM STATUS page on the MFD. If there is a Red-X, troubleshoot why the GDC is offline before proceeding. • Swap GIA1 and GIA2. Reconfigure both GIA's at their new locations to see if the problem is in the original GIA1. – Replace original GIA1 if box turns green after swapping units. • Check the GIA1/FIKI Stall Warning Computer interconnect wiring and unit connector pins for faults. • Check FIKI Stall Warning Computer Operation. Replace GDC 74A #1.
			GIA1/FIKI Stall Warning Computer data path functionality is unknown. Reload GIA1 configuration files.

<table>
<tr><td rowspan="3">IN 5</td><td rowspan="3">GDC 74A #1</td><td></td><td>GIA1/GDC 74A #1 data path is functioning correctly.</td></tr>
<tr><td></td><td>GIA1/GDC 74A #1 data path is not functioning correctly.
• Check PFD Alert Window for GIA or GDC configuration or software error messages. Correct any errors before proceeding.
• Make sure the GDC 74A #1 status is OK using the AUX – SYSTEM STATUS page on the MFD. If there is a Red-X, troubleshoot why the GDC is offline before proceeding.
• Swap GIA1 and GIA2. Reconfigure both GIA's at their new locations to see if the problem is in the original GIA1.
  – Replace original GIA1 if box turns green after swapping units.
• Check the GIA1/GDC 74A #1 interconnect wiring and unit connector pins for faults.
• Replace GDC 74A #1.</td></tr>
<tr><td></td><td>GIA1/GDC 74A #1 data path functionality is unknown. Reload GIA1 configuration files.</td></tr>
</table>

GIA1 ARINC 429 (continued)

Channel	LRU	Indicator	Status
			GIA1/GRS 77 #1 data path is functioning correctly.
IN 6	GRS 77 #1		GIA1/GRS 77 #1 data path is not functioning correctly. • Check PFD Alert Window for GIA or GRS configuration or software error messages. Correct any errors before proceeding. • Make sure the GRS77 #1 status is OK using the AUX - SYSTEM STATUS PAGE on the MFD. If there is a Red-X, troubleshoot why the GRS is offline before proceeding. • Make sure the GRS77 #1 connecter is secure and proper wire harness strain relief is provided. • Swap GIA1 and GIA2. Reconfigure both GIA's at their new locations to see if the problem is in the original GIA1. – Replace original GIA1 if box turns green after swapping units. • Swap GRS77 #1 and GRS77 #2 (if a GRS77 #2 is installed) to see if the problem is in the original GRS1. – Replace original GRS77 #1 if box turns green after swapping units. • Check the GIA1/GRS 77 #1 interconnect wiring and unit connector pins for faults. • Replace GRS 77 #1.
			GIA1/GRS 77 #1 data path functionality is unknown. Reload GIA1 configuration files.

GIA1 ARINC 429 (continued)

Channel	LRU	Indicator	Status
IN 7	GDC 74A #2 (if equipped)		GIA1/GDC 74A #2 data path is functioning correctly.
			GIA1/GDC 74A #2 data path is not functioning correctly. • Check PFD Alert Window for GIA or GDC configuration or software error messages. Correct any errors before proceeding. • Make sure the GDC 74A #2 status is OK using the AUX – SYSTEM STATUS page on the MFD. If there is a Red-X, troubleshoot why the GDC is offline before proceeding. • Swap GIA1 and GIA2. Reconfigure both GIA's at their new locations to see if the problem is in the original GIA1. – Replace original GIA1 if box turns green after swapping units. • Check the GIA1/GDC 74A #2 interconnect wiring and unit connector pins for faults. • Replace GDC 74A #2.
			GIA1/GDC 74A #2 data path functionality is unknown. Reload GIA1 configuration files.

GIA1 ARINC 429 (continued)

<table>
<tr><th>Channel</th><th>LRU</th><th>Indicator</th><th>Status</th></tr>
<tr><td rowspan="3">IN 8</td><td rowspan="3">GRS 77 #2 (if equipped)</td><td></td><td>GIA1/GRS 77 #2 data path is functioning correctly.</td></tr>
<tr><td></td><td>GIA1/GRS 77 #2 data path is not functioning correctly.
• Check PFD Alert Window for GIA or GRS configuration or software error messages. Correct any errors before proceeding.
• Make sure the GRS77 #2 status is OK using the AUX - SYSTEM STATUS PAGE on the MFD. If there is a Red-X, troubleshoot why the GRS is offline before proceeding.
• Make sure the GRS77 #2 connecter is secure and proper wire harness strain relief is provided.
• Swap GIA1 and GIA2. Reconfigure both GIA’s at their new locations to see if the problem is in the original GIA1.
– Replace original GIA1 if box turns green after swapping units.
• Swap GRS77 #1 and GRS77 #2 to see if the problem is in the original GRS77 #2.
– Replace original GRS77 #2 if box turns green after swapping units.
• Check the GIA1/GRS 77 #2 interconnect wiring and unit connector pins for faults.
• Replace GRS 77 #2.</td></tr>
<tr><td></td><td>GIA1/GRS 77 #2 data path functionality is unknown. Reload GIA1 configuration files.</td></tr>
</table>

GIA2 RS-232

<table>
<tr><th>Channel</th><th>LRU</th><th>Indicator</th><th>Status</th></tr>
<tr><td rowspan="3">CHNL 1</td><td rowspan="3">GDC 74A #2</td><td></td><td>GIA2/GDC 74A #2 data path is functioning correctly.</td></tr>
<tr><td></td><td>GIA2/GDC 74A #2 data path is not functioning correctly.
• Check PFD Alert Window for GIA or GDC configuration or software error messages. Correct any errors before proceeding.
• Make sure the GDC 74A #2 status is OK using the AUX – SYSTEM STATUS page on the MFD. If there is a Red-X, troubleshoot why the GDC is offline before proceeding.
• Swap GIA1 and GIA2. Reconfigure both GIA's at their new locations to see if the problem is in the original GIA2.
– Replace original GIA2 if box turns green after swapping units.
• Check the GIA2/GDC 74A #2 interconnect wiring and unit connector pins for faults.
• Replace GDC 74A #2.</td></tr>
<tr><td></td><td>GIA2/GDC 74A #2 data path functionality is unknown. Reload GIA2 configuration files.</td></tr>
<tr><td>CHNL 2</td><td>GRS 77 #1 (output only)</td><td></td><td>GIA2/GRS 77 #1 output data path is not monitored. A black box is normal.</td></tr>
</table>

GIA2 RS-232 (continued)

<table>
<tr><th>Channel</th><th>LRU</th><th>Indicator</th><th>Status</th></tr>
<tr><td rowspan="3">CHNL 3</td><td rowspan="3">WX 500</td><td></td><td>GIA2/WX 500 data path is functioning correctly.</td></tr>
<tr><td></td><td>GIA2/WX 500 data path is not functioning correctly.
• Check PFD Alert Window for GIA configuration or software error messages. Correct any errors before proceeding.
• Swap GIA1 and GIA2. Reconfigure both GIA's at their new locations to see if the problem is in the original GIA2.
– Replace original GIA2 if box turns green after swapping units.
• Check the GIA2/WX500 interconnect wiring and connector pins for faults.
• Troubleshoot WX500 according to manufacturer's instructions if problem remains.</td></tr>
<tr><td></td><td>GIA2/WX 500 data path functionality is unknown. Reload GIA2 configuration files.</td></tr>
</table>

CHNL 4	Guardian CO2 Detector		GIA2/Guardian data path is functioning correctly.
			GIA2/Guardian data path is not functioning correctly. • Check PFD Alert Window for GIA configuration or software error messages. Correct any errors before proceeding. • Swap GIA1 and GIA2. Reconfigure both GIA's at their new locations to see if the problem is in the original GIA2. – Replace original GIA2 if box turns green after swapping units. • Check the GIA2/Guardian interconnect wiring and connector pins for faults. Troubleshoot detector according to manufacturer's instructions if problem remains.
			GIA2/Guardian data path functionality is unknown. Reload GIA2 configuration files.
CHNL 5	GTX 32/33		GIA2/GTX 32/33 data path is functioning correctly.
			GIA2/GTX 32/33 data path is not functioning correctly. • Check PFD Alert Window for GIA or GTX configuration or software error messages. Correct any errors before proceeding. • Swap GIA1 and GIA2. Reconfigure both GIA's at their new locations to see if the problem is in the original GIA2. – Replace original GIA2 if box turns green after swapping units. • Check the GIA2/GTX 32/33 interconnect wiring and connector pins for faults. • Replace GTX 32/33.
			GIA2/GTX 32/33 data path functionality is unknown. Reload GIA2 configuration files.

GIA2 RS-232 (continued)

<table>
<tr><th>Channel</th><th>LRU</th><th>Indicator</th><th>Status</th></tr>
<tr><td rowspan="3">CHNL 6</td><td rowspan="3">GRS 77 #2 (if equipped)</td><td>■</td><td>GIA2/GRS 77 #2 data path is functioning correctly.</td></tr>
<tr><td>■</td><td>GIA2/GRS 77 #2 data path is not functioning correctly.

Check PFD Alert Window for GIA or GRS configuration or software error messages. Correct any errors before proceeding.
Make sure the GRS77 #2 status is OK using the AUX - SYSTEM STATUS PAGE on the MFD. If there is a Red-X, troubleshoot why the GRS is offline before proceeding.
Make sure the GRS77 #2 connecter is secure and proper wire harness strain relief is provided.
Swap GIA1 and GIA2. Reconfigure both GIA’s at their new locations to see if the problem is in the original GIA2.
Replace original GIA2 if box turns green after swapping units.
Swap GRS77 #1 and GRS77 #2 to see if the problem is in the original GRS77 #2.
Replace original GRS77 #2 if box turns green after swapping units.
Check the GIA2/GRS 77 #2 interconnect wiring and unit connector pins for faults.
Replace GRS 77 #2.
</td></tr>
<tr><td>■</td><td>GIA2/GRS 77 #2 data path functionality is unknown. Reload GIA2 configuration files.</td></tr>
</table>

GIA2 RS-232 (continued)

<table>
<tr><th>Channel</th><th>LRU</th><th>Indicator</th><th>Status</th></tr>
<tr><td rowspan="3">CHNL 7</td><td rowspan="3">GMA 347*</td><td></td><td>GIA1/GMA 347 data path is functioning correctly.</td></tr>
<tr><td></td><td>GIA1/GMA 347 data path is not functioning correctly.
Check PFD Alert Window for GIA or GMA configuration or software error messages. Correct any errors before proceeding.
Make sure the GMA 347 status is OK using the AUX - SYSTEM STATUS PAGE on the MFD. If there is a Red-X, troubleshoot why the GMA is offline before proceeding.
Swap GIA1 and GIA2. Reconfigure both GIA's at their new locations to see if the problem is in the original GIA2.
Replace original GIA2 if box turns green after swapping units.
Check the GIA2/GMA 347 interconnect wiring and connector pins for faults.
Replace GMA 347</td></tr>
<tr><td></td><td>GIA1/GMA 347 data path functionality is unknown. Reload GIA1 configuration files.</td></tr>
</table>

NOTE

* - The path is identified by the Cirrus Perspective™ System as GMA 1347#1 on the GIA RS-232/RS-485 CONFIG page.

GIA2 ARINC 429

<table>
<tr><th>Channel</th><th>LRU</th><th>Indicator</th><th>Status</th></tr>
<tr><td rowspan="3">IN 4</td><td rowspan="3">SKYWATCH 497 (Optional)</td><td></td><td>GIA2/SKYWATCH 497 data path is functioning correctly.</td></tr>
<tr><td></td><td>GIA2/SKYWATCH 497 data path is not functioning correctly.
• Check PFD Alert Window for GIA configuration or software error messages. Correct any errors before proceeding.
• Swap GIA1 and GIA2. Reconfigure both GIA’s at their new locations to see if the problem is in the original GIA2.
– Replace original GIA2 if box turns green after swapping units.
• Check the GIA2/Skywatch interconnect wiring and connector pins for faults.
• Troubleshoot Skywatch according to manufacturer’s instructions if problem remains.</td></tr>
<tr><td></td><td>GIA2/SKYWATCH 497 data path functionality is unknown. Reload GIA2 configuration files.</td></tr>
</table>

<table>
<tr><td rowspan="3">IN 5</td><td rowspan="3">GDC 74A #1</td><td></td><td>GIA2/GDC 74A #1 data path is functioning correctly.</td></tr>
<tr><td></td><td>GIA2/GDC 74A #1 data path is not functioning correctly.
• Check PFD Alert Window for GIA or GDC configuration or software error messages. Correct any errors before proceeding.
• Make sure the GDC 74A #1 status is OK using the AUX – SYSTEM STATUS page on the MFD. If there is a Red-X, troubleshoot why the GDC is offline before proceeding.
• Swap GIA1 and GIA2. Reconfigure both GIA's at their new locations to see if the problem is in the original GIA2.
– Replace original GIA2 if box turns green after swapping units.
• Check the GIA2/GDC 74A #1 interconnect wiring and unit connector pins for faults.
• Replace GDC 74A #1.</td></tr>
<tr><td></td><td>GIA2/GDC 74A #1 data path functionality is unknown. Reload GIA2 configuration files.</td></tr>
</table>

GIA2 ARINC 429 (continued)

<table>
<tr><th>Channel</th><th>LRU</th><th>Indicator</th><th>Status</th></tr>
<tr><td rowspan="3">IN 6</td><td rowspan="3">GRS 77 #1</td><td></td><td>GIA2/GRS 77 #1 data path is functioning correctly.</td></tr>
<tr><td></td><td>GIA2/GRS 77 #1 data path is not functioning correctly.
• Check PFD Alert Window for GIA or GRS configuration or software error messages. Correct any errors before proceeding.
• Make sure the GRS77 #1 status is OK using the AUX - SYSTEM STATUS PAGE on the MFD. If there is a Red-X, troubleshoot why the GRS is offline before proceeding.
• Make sure the GRS77 #1 connecter is secure and proper wire harness strain relief is provided.
• Swap GIA1 and GIA2. Reconfigure both GIA’s at their new locations to see if the problem is in the original GIA2.
– Replace original GIA2 if box turns green after swapping units.
• Swap GRS77 #1 and GRS77 #2 (if a GRS77 #2 is installed) to see if the problem is in the original GRS77 #1.
– Replace original GRS77 #1 if box turns green after swapping units.
• Check the GIA2/GRS 77 #1 interconnect wiring and unit connector pins for faults.
• Replace GRS 77 #1.</td></tr>
<tr><td></td><td>GIA2/GRS 77 #2 data path functionality is unknown. Reload GIA2 configuration files.</td></tr>
</table>

GIA2 ARINC 429 (continued)

<table>
<tr><th>Channel</th><th>LRU</th><th>Indicator</th><th>Status</th></tr>
<tr><td rowspan="3">IN 7</td><td rowspan="3">GDC 74A #2 (if equipped)</td><td></td><td>GIA2/GDC 74A #2 data path is functioning correctly.</td></tr>
<tr><td></td><td>GIA2/GDC 74A #2 data path is not functioning correctly.
Check PFD Alert Window for GIA or GDC configuration or software error messages. Correct any errors before proceeding.
Make sure the GDC 74A #2 status is OK using the AUX – SYSTEM STATUS page on the MFD. If there is a Red-X, troubleshoot why the GDC is offline before proceeding.
Swap GIA1 and GIA2. Reconfigure both GIA's at their new locations to see if the problem is in the original GIA2.
Replace original GIA2 if box turns green after swapping units.
Check the GIA2/GDC 74A #2 interconnect wiring and unit connector pins for faults.
Replace GDC 74A #2.</td></tr>
<tr><td></td><td>GIA2/GDC 74A #2 data path functionality is unknown. Reload GIA2 configuration files.</td></tr>
</table>

GIA2 ARINC 429 (continued)

IN 8	GRS 77 #2 (if equipped)		GIA2/GRS 77 #2 data path is functioning correctly.
			GIA2/GRS 77 #2 data path is not functioning correctly. • Check PFD Alert Window for GIA or GRS configuration or software error messages. Correct any errors before proceeding. • Make sure the GRS77 #2 status is OK using the AUX - SYSTEM STATUS PAGE on the MFD. If there is a Red-X, troubleshoot why the GRS is offline before proceeding. • Make sure the GRS77 #2 connecter is secure and proper wire harness strain relief is provided. • Swap GIA1 and GIA2. Reconfigure both GIA's at their new locations to see if the problem is in the original GIA2. – Replace original GIA2 if box turns green after swapping units. • Swap GRS77 #1 and GRS77 #2 to see if the problem is in the original GRS77 #2. – Replace original GRS77 #2 if box turns green after swapping units. • Check the GIA2/GRS 77 #2 interconnect wiring and unit connector pins for faults. • Replace GRS 77 #2.
			GIA2/GRS 77 #2 data path functionality is unknown. Reload GIA2 configuration files.

GIA RS-485 Configuration Page

NOTE

Do not load any GEA configuration files unless it is absolutely necessary. The HSCM circuits must be recalibrated if they are reloaded.

<u>GIA1 RS-485</u>

<table>
<tr><th>Channel</th><th>LRU</th><th>Indicator</th><th>Status</th></tr>
<tr><td rowspan="3">CHNL 1</td><td rowspan="3">GEA1</td><td></td><td>GIA1/GEA1 data path is functioning correctly.</td></tr>
<tr><td></td><td>GIA1/GEA1 data path is not functioning correctly.
• Check PFD Alert Window for GIA or GEA configuration or software error messages. Correct any errors before proceeding.
• Make sure the GEA status is OK using the AUX - SYSTEM STATUS PAGE on the MFD. If there is a Red-X, troubleshoot why the GEA is offline before proceeding.
• Swap GIA1 and GIA2. Reconfigure both GIA’s at their new locations to see if the problem is in the original GIA1.
  – Replace original GIA1 if box turns green after swapping units.
• Check the GIA1/GEA1 interconnect wiring and connector pins for faults.
• Replace GEA71.</td></tr>
<tr><td></td><td>GIA1/GEA1 data path functionality is unknown. Reload GIA1 configuration files.</td></tr>
</table>

<table>
<tr><td rowspan="3">CHNL 4</td><td rowspan="3">GFC 700</td><td></td><td>GIA1/GFC 700 data path is functioning correctly.</td></tr>
<tr><td></td><td>GIA1/GFC 700 data path is not functioning correctly.
• Check PFD Alert Window for GIA, GFC, GTA or GSA configuration or software error messages. Correct any errors before proceeding.
• Make sure all GSA/GTA servo statuses are OK using the AUX - SYSTEM STATUS PAGE on the MFD. If one or all show a Red-X, troubleshoot why the servos are offline before proceeding.
• Swap GIA1 and GIA2. Reconfigure both GIA's at their new locations to see if the problem is in the original GIA1.
– Replace original GIA1 if box turns green after swapping units.
• Check the GIA1/GSA/GTA interconnect wiring and connector pins for faults.
• Proceed to the Autopilot Troubleshooting section for further assistance.</td></tr>
<tr><td></td><td>GIA1/GFC 700 data path functionality is unknown. Reload GIA1 and GFC700 configuration files.</td></tr>
</table>

GIA2 RS-485

<table>
<tr><th>Channel</th><th>LRU</th><th>Indicator</th><th>Status</th></tr>
<tr><td rowspan="3">CHNL 1</td><td rowspan="3">GEA1</td><td></td><td>GIA2/GEA1 data path is functioning correctly.</td></tr>
<tr><td></td><td>GIA2/GEA1 data path is not functioning correctly.
• Check PFD Alert Window for GIA or GEA configuration or software error messages. Correct any errors before proceeding.
• Make sure the GEA status is OK using the AUX - SYSTEM STATUS PAGE on the MFD. If there is a Red-X, troubleshoot why the GEA is offline before proceeding.
• Swap GIA1 and GIA2. Reconfigure both GIA’s at their new locations to see if the problem is in the original GIA2.
– Replace original GIA2 if box turns green after swapping units.
• Check the GIA2/GEA1 interconnect wiring and connector pins for faults.
• Replace GEA71.</td></tr>
<tr><td></td><td>GIA2/GEA1 data path functionality is unknown. Reload GIA2 configuration files.</td></tr>
</table>

5.6 GDU RELATED ALERTS AND PROBLEMS

5.6.1 General Problems

Symptom	Recommended Action
Display will not track photocell	• Go to the GDU TEST page in configuration mode. Cover and uncover the photocells and make sure that PHOTOCELL A or PHOTOCELL B value changes. – If values do not change, replace the display. • Reload GDU configuration files.
Keyboard will not track photocell	
Display will not track dimmer bus	• Reload GDU configuration files. • Swap PFD or MFD to see if problem remains with display. – Replace display if condition remains with the same unit. – If condition remains in original position after swapping displays, check GDU dimmer input for the presence of voltage.
Keyboard will not track dimmer bus	
Display is blank	• Make sure a cell phone or a device using cell phone technology is not turned on (even in a monitoring state) in the cabin. • Cycle power. • If GDU recovers, observe display for yellow text containing error information at the top of the screen. If message indicates that software needs to be reloaded, then reload software. Otherwise, replace the GDU. • Use a bright light to make sure the LCD is active. • Adjust avionics dimmer control fully clockwise. • Manually turn up backlight on the PFD and load configuration files to the GDU. • Make sure the slide lock is fully engaged with the locking tabs on the back of the unit. If slide lock is not fully engaged, remove connector and make sure the locking tabs on the GDU are perpendicular to the connector. If necessary, straighten them before reseating connector. • Make sure the GDU is receiving power. If a circuit breaker is tripped, determine source of short before resetting breaker. • Make sure the circuit breakers have not failed and power wire connections are secure. • Swap PFD or MFD. • If problem follows unit, replace the display. Please note the position it failed in (PFD OR MFD). • If problem does not follow unit, troubleshoot aircraft wiring for fault.
Display resets	
Display flickers	

Symptom	Recommended Action
SD card is stuck in GDU	• DO NOT insert a screwdriver of any length into the card slot. • DO NOT pry against the overlay. • DO NOT force the SD Card out. • Use a small screwdriver in the groove on the side of the exposed end of the card to help pull out the card. • Push the card in further to release the card locking mechanism. • Check SD Card for having more than one label. Two or more labels on the card will cause sticking. • Remove all but one label. • Insure the SD card is from SanDisk. Use of other brand of SD Cards is not recommended due to variances in card thickness. • If card was inserted with the label facing to the right, do not attempt to remove. Return the unit to Garmin for repair.
A button/knob/joystick does not appear to function	• Go to the GDU TEST page in configuration mode and make sure the button, knob, or joystick operates correctly by observing a change in color from red to green in the button/knob/joystick icon when the button/knob/joystick is pressed. If a button is stuck, the button icon will be green without pressing the button as soon as you turn to the GDU TEST page. • If problem is verified, replace GDU.
Terrain/Obstacle/SafeTaxi/ FliteCharts does not display on map	• Check the PFD ALERT window for any Database Error Messages. Correct before proceeding. • Make sure the supplemental data cards are inserted correctly in the lower slots of all three GDU's. • Allow the system to verify the data on the cards for approximately five minutes after power-up. • If a database does not activate, reload the problem database onto the SD Card or replace the card.

5.6.2 Database and Software Alerts

<table>
<tr><th>Message</th><th>Cause</th><th>Solutions</th></tr>
<tr><td>MFD1 DB ERR – MFD1 aviation database error exists.</td><td>The MFD has encountered an error in the Jeppesen database.</td><td rowspan="2">Reload aviation database into the display.
Contact Garmin Technical Support for assistance.</td></tr>
<tr><td>PFD DB ERR – PFD aviation database error exists.</td><td>PFD has encountered an error in the Jeppesen database.</td></tr>
<tr><td>MFD1 DB ERR – MFD1 basemap database error exists.</td><td>The MFD has encountered an error in the basemap database.</td><td rowspan="2">Make sure the supplemental data card is inserted fully in the bottom slot of the display.
Remove the supplemental data card from the bottom slot of the display and insert in the top slot.
If the problem is resolved, the bottom card slot is dirty or has failed. Try reinserting the card multiple times in the bottom slot to clean the card contacts. If the problem remains in the bottom slot, you may leave the card in the top slot (if the top slot if unused) or replace the display.
Swap with a supplemental data card from another display in the same system.
If problem moves to the other display; you may either copy the file “bmap.bin” from the good card to the bad one, download a replacement file from Garmin’s website in the Dealer’s Only section, or replace all the supplemental datacards as a set. If the basemap data files are corrupt on both cards, download a replacement file from Garmin’s website in the Dealer’s Only section.
If problem remains in the same GDU, replace that GDU.</td></tr>
<tr><td>PFD DB ERR – PFD basemap database error exists.</td><td>PFD has encountered an error in the basemap database.</td></tr>
</table>

Database and Software Alerts (continued)		
Message	**Cause**	**Solutions**
MFD1 DB ERR – MFD1 terrain database error exists.	The MFD has encountered an error in the terrain database.	• Make sure the supplemental data card is inserted fully in the bottom slot of the display. • Remove the supplemental data card from the bottom slot of the display and insert in the top slot. – If the problem is resolved, the bottom card slot is dirty or has failed. Try reinserting the card multiple times in the bottom slot to clean the card contacts. If the problem remains in the bottom slot, you may leave the card in the top slot (if the top slot if unused) or replace the display. • Swap with a supplemental data card from another display in the same system. – If problem moves to the other display, reload the database or replace all the supplemental datacards as a set. – If problem remains in the same GDU, replace that GDU.
PFD DB ERR – PFD terrain database error exists.	PFD has encountered an error in the terrain database.	
MFD1 DB ERR – MFD1 obstacle database error exists.	The MFD has encountered an error in the obstacle database.	
PFD DB ERR – PFD obstacle database error exists.	PFD has encountered an error in the obstacle database.	
MFD1 DB ERR – MFD1 airport terrain database error exists.	The MFD has encountered an error in the airport terrain database.	
PFD DB ERR – PFD airport terrain database error exists.	PFD has encountered an error in the airport terrain database.	
MFD1 DB ERR – MFD1 Safe Taxi® database error exists.	The MFD has encountered an error in the SafeTaxi® database.	

Database and Software Alerts (continued)		
Message	**Cause**	**Solutions**
PFD DB ERR – PFD Safe Taxi® database error exists.	PFD has encountered an error in the SafeTaxi® database.	• Make sure the supplemental data card is inserted fully in the bottom slot of the display. • Remove the supplemental data card from the bottom slot of the display and insert in the top slot. If the problem is resolved, the bottom card slot is dirty or has failed. Try reinserting the card multiple times in the bottom slot to clean the card contacts. • If the problem remains in the bottom slot, you may leave the card in the top slot (if the top slot if unused) or replace the display. • Swap with a supplemental data card from another display in the same system. • If problem moves to the other display, reload the database or replace all the supplemental datacards as a set. • If problem remains in the same GDU, replace that GDU.

Database and Software Alerts (continued)		
Message	**Cause**	**Solutions**
MFD1 DB ERR – MFD1 ChartView database error.	The MFD has encountered an error in the ChartView database.	• Make sure the supplemental data card is inserted fully in the top slot of the display. • Remove the supplemental data card from the top slot of the display and insert in the bottom slot. – If the problem is resolved, the top card slot is dirty or has failed. Try reinserting the card multiple times in the top slot to clean the card contacts. If the problem remains in the top slot, replace the display. • Reload the Jeppesen ChartView database onto the card.
MFD1 DB ERR – MFD1 Terminal Procs database error exists.	The MFD has encountered an error in the Terminal Procedures database.	• Make sure the supplemental data card is inserted fully in the bottom slot of the display. • Remove the supplemental data card from the bottom slot of the display and insert in the top slot. – If the problem is resolved, the bottom card slot is dirty or has failed. Try reinserting the card multiple times in the bottom slot to clean the card contacts. If the problem remains in the bottom slot, you may leave the card in the top slot (if the top slot if unused) or replace the display. • Swap with a supplemental data card from another display in the same system. – If problem moves to the other display, reload the database or replace all the supplemental datacards as a set. • If problem remains in the same GDU, replace that GDU.

DB MISMATCH – Aviation database version mismatch. Xtalk is off.	The system has found the Jeppesen aviation database in the PFD and MFD do not match.	• Load the same cycle of aviation database to all displays.
DB MISMATCH – Aviation database type mismatch.	The system has found the Jeppesen aviation database types do not match.	• Load same type aviation database to all displays.

Database and Software Alerts (continued)		
Message	**Cause**	**Solutions**
DB MISMATCH – Terrain database version mismatch.	The PFD and/or MFD have different terrain database versions installed.	• Insert two identical version supplemental database cards in the PFD and MFD.
DB MISMATCH – Obstacle database version mismatch.	The PFD and/or MFD have different obstacle database versions installed.	
DB MISMATCH – Terrain database type mismatch.	The PFD and/or MFD have different terrain database types installed.	
DB MISMATCH – Airport Terrain database mismatch. Xtalk is off.	The PFD and/or MFD have different airport terrain database types installed.	
CAS INOP	The system has found the PFD and/or MFD software versions do not match.	• Reload PFD and MFD software.
	The Aviation databases do not match in both displays.	• Reload Aviation database in all displays.
SW MISMATCH – GDU software version mismatch. Xtalk is off.	The system has found the PFDs and/or MFD software versions do not match.	• Load correct software version into both displays.
MANIFEST – PFD software mismatch. Communication Halted.	The system has detected an incorrect software version loaded in PFD.	• Load correct software version into the display.
MANIFEST – MFD software mismatch. Communication Halted.	The system has detected an incorrect software version loaded in MFD.	
CNFG MODULE – PFD configuration module is inoperative.	The PFD master configuration module has failed.	• Check master configuration module connector and wiring for damage inside the GDU connector backshell.

5.6.3 Cooling Alerts

NOTE
The following alerts only apply if the cooling fan inputs are configured on.

Message	Cause	Solutions
MFD1 COOLING – has poor cooling. Reducing power usage.	The MFD has exceeded its operating temperature range.	• Check cooling fan and wiring for proper operation. – Replace cooling fan if unable to determine if operating correctly. • If problem persists, replace the MFD.
PFD COOLING – has poor cooling. Reducing power usage.	PFD has exceeded its operating temperature range.	• Check cooling fan and wiring for proper operation. – Replace cooling fan if unable to determine if operating correctly. • If problem persists, replace the PFD.

5.6.4 Key Alerts

<table>
<tr><th>Message</th><th>Cause</th><th>Solutions</th></tr>
<tr><td>MFD1 “key” KEYSTK – key is stuck.</td><td>The system has determined a key is stuck on the MFD.</td><td rowspan="2">• Go to the GDU TEST page in configuration mode and see if the key is stuck (if the key is stuck the corresponding indicator will be green).
• Exercise suspected stuck key and reset GDU TEST page to see if indicator remains green without pressing the key.
• If problem persists, replace the display.</td></tr>
<tr><td>PFD “key” KEYSTK – key is stuck.</td><td>The system has determined a key is stuck on PFD.</td></tr>
</table>

5.6.5 Miscellaneous Alerts

Message	Cause	Solutions
XTALK ERROR – A flight display cross talk error has occurred.	A communication error has occurred between the MFD and PFD.	• Check the PFD ALERTS Window for database error Messages. Correct all errors before proceeding. • Check display Ethernet interconnect wiring and pins for faults. • Replace PFD with a known good unit, to verify location of problem: – If problem persists, reinstall original PFD. – Replace MFD.
SIMULATOR – Sim mode is active. Do not use for navigation.	The system is in simulator mode.	• Check wiring (pin 54 in all GDU connectors should be empty). • Replace PFD with a known good unit, to verify location of problem: – If problem persists, reinstall original PFD. – If problem persists replace MFD.

Miscellaneous Alerts (continued)

Message	Cause	Solutions
DATA LOST – Pilot stored data lost. Recheck settings.	Pilot stored data has been lost.	• If the CLR key was held during a power cycle, disregard message. • Cycle power to PFD: – Make sure the CLR key is not stuck on the GDU TEST page. – If problem persists, replace PFD.
MFD1 SERVICE – needs service. Return unit for repair.	The system has determined the MFD needs service.	• Make sure the MFD connector is fully seated and locked. • If the unit was started in a very dark environment, the photocells may not have enough light to initially raise the CCFT level. Go to the GDU STATUS page in configuration mode, make sure the CCFT CRNT 1 & 2 levels are above 50. – If the CCFT levels are not above 50, apply light to the photocell and observe if the CCFT level rises. – If the CCFT level rises, disregard the message. – If the CCFT level does not rise, replace the MFD. • In configuration mode, check the SDRAM and BKUP CAPS status on the GDU TEST page. If a red indication exists for either of these, the MFD needs to be repaired or replaced. • Replace the MFD.

Miscellaneous Alerts (continued)

PFD SERVICE – needs service. Return unit for repair.	The system has determined PFD needs service.	• Make sure the PFD connector is fully seated and locked. • If the unit was started in a very dark environment, the photocells may not have enough light to initially raise the CCFT level. Go to the GDU STATUS page in configuration mode, make sure the CCFT CRNT 1 & 2 levels are above 50. – If the CCFT levels are not above 50, apply light to the photocell and observe if the CCFT level rises. – If the CCFT level rises, disregard the message. – If the CCFT level does not rise, replace the PFD. • Inspect the master configuration module connections in the PFD connector • In configuration mode, check the SDRAM and BKUP CAPS status on the GDU TEST page. If a red indication exists for either of these, the PFD needs to be repaired or replaced. • Replace the PFD.

Miscellaneous Alerts (continued)

Message	Cause	Solutions
PFD CONFIG – PFD configuration error. Config service req'd.	The system has detected a PFD configuration mismatch.	• Reload PFD configuration files from SD Loader Card. • Reload system configuration files by pressing the UPDT CFG softkey on the Configuration Upload Page in the System Page Group to load configuration files into the configuration module. – If message persists, check config module wiring for faults and replace if necessary. – If problem persists, replace the PFD.

Miscellaneous Alerts (continued)

Message	Cause	Solutions
MFD CONFIG – MFD configuration error. Config service req'd.	The system has detected a MFD configuration mismatch.	• Reload MFD configuration files from SD Loader Card. • Reload system configuration files by pressing the UPDT CFG softkey on the Configuration Upload Page in the System Page Group to load configuration files into the configuration module. – If message persists, check config module wiring for faults and replace if necessary. – If problem persists, replace the MFD.
PFD VOLTAGE – PFD has low voltage. Reduce power usage.	PFD is not receiving sufficient voltage.	• Check input voltage to PFD. – If input voltage is ok, replace PFD.
MFD1 VOLTAGE – MFD1 has low voltage. Reduce power usage.	The MFD is not receiving sufficient voltage.	• Check input voltage to the MFD. – If input voltage is ok, replace the MFD.

Miscellaneous Alerts (continued)

Message	Cause	Solutions
TAWS FAIL	A TAWS system failure has occurred.	• If message occurred on the first power up after unlocking TAWS, cycle power to initialize TAWS. • Make sure each GDU contains a supplemental data card with a terrain and obstacle database present. • Make sure the GIA's are online. • Make sure the GPS receivers have a position lock. TAWS must have a GPS position and altitude present to operate. • Make sure an Airport Terrain, Obstacle, Terrain, Aviation Database, or GDU SW mismatch has not occurred. – If a mismatch has occurred, load correct database/software files or replace all the supplemental database cards as a set.
TAWS TEST	TAWS system is currently being tested.	• Normal annunciation during self test. Test will take up to two minutes to complete.
TAWS INHB	TAWS system alerting is disabled	• Enable TAWS system alerting by pressing the MENU button from the MAP – TAWS page.
TAWS N/A	GPS system integrity not high enough to enable TAWS	• Make sure a valid GPS position is received from the AUX – GPS STATUS page.
TRAFFIC FAIL	Communication with the traffic device has failed.	• If a non-Garmin traffic device is installed, refer to the manufacturer's maintenance manual to determine if it is operating correctly. • Check GIA2/Traffic Device wiring and connectors for faults.

5.7 GMA 347 RELATED ALERTS AND PROBLEMS

5.7.1 Common Problems

<table>
<tr><th>Symptom</th><th>Recommended Action</th></tr>
<tr><td>Noise in Audio</td><td>Most often the cause of the noise is external to the GMA 347. Try the following to locate the source of the noise before replacing the 347:

Try a different pair of headsets. Noise cancelling headsets may pick up and/or generate more noise than standard headsets from their own circuitry.
Check for noise with engine turned off.
If the noise is present only when the engine is running, check the generator and/or ignition system as possible sources of noise (see Cirrus Maintenance Manual).
Check for noise as all electrical equipment is turned on and off (strobes, other radios, etc.).
If the noise is identified from one electrical system or component refer to the Cirrus airframe maintenance manual.
Make sure the NAV/COM squelch is not open.
Make sure the ADF and DME audio is not active.
Make sure the marker beacon audio is not active.
Make sure the ICS squelch is not open. Master squelch level can be adjusted on the GMA CONFIGURATION page for higher noise environments.
Check resistors in line with Music 1 and Music 2 wiring at the GMA 347 in accordance with system wiring diagrams
Make sure the Mic and Phone jacks are insulated from airframe ground and that Music 1 and Music 2 jacks are not insulated from airframe ground in console.
Replace unit only after all possible external sources of noise are eliminated.
</td></tr>
<tr><td>Buttons Do Not Work.</td><td>Some buttons are disabled in the GMA CONFIGURATION page by default. This is to remove potential sources of audio noise for inputs that are not used. If in doubt as to which buttons should be disabled, reload GMA config files and other config files for optional equipment installed in the aircraft (ADF, DME) from the SD loader card.</td></tr>
</table>

COM Bleed over	• Make sure on the GMA CONFIGURATION page that “MUTE AUDIO ON TX” has a green box. Due to the closeness of the COM antennas and high power of the COM transmitters, COM bleed-over may occur if this option is enabled. If the box is black, highlight “MUTE AUDIO ON TX” with the cursor and press the ENT key to turn the box green.
Speaker Cuts Out	• Reduce the volume of the item that caused the speaker to cut out when turned up. A speaker protection circuit disables the speaker output if the volume is too high. If the volume is not sufficient, replace aircraft cabin speaker, reference the Cirrus Maintenance Manual.
MIC Audio Heard in Speaker	• Reduce ICS Volume.

5.7.2 GMA 347 Alerts

Message	Cause	Solutions
MANIFEST – GMA1 software mismatch. Communication Halted.	The system has detected an incorrect software version loaded in GMA 347.	• Load correct software version.
GMA1 SERVICE – GMA1 needs service. Return unit for repair.	The system has determined GMA 347 needs service.	• Replace the GMA 347.
GMA1 FAIL – GMA 1 is inoperative.	The system has detected a failure in GMA 347.	• Make sure the 347 is receiving power. • Make sure both GIAs are receiving power. • Make sure all GDUs are receiving power. • Make sure the 347/GIA RS-232 data lines are working properly. • Make sure the GIA/GDU Ethernet data lines are working properly. • Replace 347.
GMA1 CONFIG – GMA1 configuration error. Config service req'd.	The system has detected a GMA 347 configuration mismatch.	• Load 347 configuration files (see Section 7). • Replace GMA 347. • If problem persists, check config module wiring for faults and replace if necessary.

5.8 GIA 63W RELATED ALERTS AND PROBLEMS

5.8.1 COM

Symptom	Recommended Action
Weak COM transmit power	• Switch GIA1 and GIA2, to verify location of problem: – If problem follows unit, replace GIA. – If problem does not follow unit, check COM antenna and cabling for faults.
Weak COM receiver	• Switch GIA1 and GIA2, to verify location of problem: – If problem follows unit, replace GIA. – If problem does not follow unit, check COM antenna and cabling for faults.
No COM sidetone	• Switch GIA1 and GIA2, to verify location of problem: – If problem follows unit, replace GIA. – If problem persists, replace 347.
COM Bleed over	• Make sure on the GMA CONFIGURATION page that “MUTE AUDIO ON TX” has a green box. Due to the closeness of the COM antennas and high power of the COM transceivers, COM bleed-over may occur if this option is enabled. If the box is black, highlight “MUTE AUDIO ON TX” with the cursor and press the ENT key to turn the box green.

5.8.1.1 COM Adjustment Procedure

The COM Calibration Procedure is not a required procedure and is not generally performed during installation or maintenance. This procedure may be used to adjust COM receiver 25kHz/8.33kHz squelch settings if needed. If the COM squelch opens after performing this procedure, the aircraft’s electrical system may be noisy causing the COM squelch to open. Find the source of electrical system noise and correct (electrical motors are a common source of interference). Desensitizing the COM squelch to prevent it from opening due to electrical system noise may reduce the receiving range of the COM.

To set COM squelch threshold:

1. Connect a ground power unit to the aircraft.
2. Disconnect the GIA COM antenna connector at the back of the GIA rack and connect an RF generator.
3. For 25kHz frequency spacing, set the RF generator to 2.0µV hard, modulated 30% at 1000Hz.
4. For 8.33kHz frequency spacing, set the RF generator to 3.0µV hard, modulated 30% at 1000 Hz.
5. Turn on the Perspective system and allow to initialize in normal mode.

6. Turn off the PFD and MFD by pulling their circuit breakers.
7. Restart the PFD and MFD in Configuration Mode.
8. On the PFD, turn to the COM SETUP page.
9. Activate the cursor and select the desired tuning frequency using the FMS knobs. *Only the frequencies 118.00, 127.00, & 136.975 may be used when setting squelch and sidetone levels.*
10. Select GIA1 or GIA2 in the COM Setup window. **This forces an update of the calibration data values and must be accomplished prior to making any changes.** Failure to do so may allow COM calibration values to be inadvertently stored into incorrect memory locations requiring GIA replacement.
11. For 25kHz operation, adjust the SQ 250 value. It may be set to any value between 0 (zero) and 63. The higher the number, the *less* signal is required to break squelch.
12. For 8.33kHz operation, adjust the SQ 833 value. It may be set to any value between 0 (zero) and 63. The higher the number, the *more* signal is required to break squelch.
13. After the squelch value is adjusted to the desired number, press the STORE softkey at the bottom of the display to save the value to the GIA.
14. Repeat steps 7-11 for tuning additional frequencies.

5.8.2 GPS

Symptom	Recommended Action

Will not acquire satellites	• Make sure a cell phone or a device using cell phone technology is not turned on (even in a monitoring state) in the cabin.
	• Check for possible external interference to the GPS receivers by turning to the GPS page on the MFD and check the GPS strength bars on both GPS receivers. If the signal strength level is erratic, or they disappear and reappear rapidly, or switch between a solid and hollow bar frequently there is an external device interfering with the GPS receivers. Turn off any devices that radiate a signal in the local area or move the aircraft to another location to remove the interference.
	• Check date and time on Date/Time Setup Page.
	  – If date and time are incorrect, enter the correct date and time.
	• Switch GIA1 and GIA2, to verify location of problem:
	  – If problem follows unit, clear the GPS almanac by performing the following steps –
	    • Using the PFD in config mode, go to the GIA RS-232/ARNIC 429 Config Page.
	    • At the top of the screen, select the GIA that cannot acquire satellites (GIA1 or GIA2) and press the ENT key.
	    • Press the "CLR NV" softkey at the bottom of the screen.
	    • Select "OK" in the "Clear GIA nonvolatile memory?" pop-up window.
	    • Next reload GIA Audio and Config files from a loader card, see Section 7 for instructions. Be sure to reload the config files for any optional equipment installed on the aircraft that require the GIA config to be updated.
	• Cycle power on the system and allow it to restart in normal mode. Place the aircraft outside and allow 15-30 minutes for the GPS to acquire a position and download a new almanac.
	  – If clearing nonvolatile memory is unsuccessful and the GPS still cannot acquire a position, replace the GIA.
	• Check GPS antenna and cabling.

5.8.3 NAV

Symptom	Recommended Action
Weak NAV receiver	• Set up a NAV/COM Ramp Test Set to radiate a test signal. • Switch GIA1 and GIA2, to verify location of problem: – If problem follows unit, replace GIA. – If problem does not follow unit, check NAV antenna, coupler, and cabling for faults.

5.8.4 G/S

Symptom	Recommended Action
Weak G/S receiver	• Set up a NAV/COM Ramp Test Set to radiate a test signal. • Switch GIA1 and GIA2, to verify location of problem: – If problem follows unit, replace GIA. – If problem does not follow unit, check NAV antenna, coupler, and cabling for faults.

5.8.5 COM Related Alerts

Message	Cause	Solutions
COM1 SERVICE – COM1 needs service. Return unit for repair.	The system has determined COM1 needs service.	• Replace GIA1.
COM2 SERVICE – COM2 needs service. Return unit for repair.	The system has determined COM2 needs service.	• Replace GIA2.

COM1 PTT – COM1 push-to-talk key is stuck.	The COM1 external push-to-talk (PTT) switch is stuck in the enabled (or “pressed”) state.	• Press the push-to-talk switch(s) again to cycle its operation. • Check push-to-talk switch(s) and wiring. • Switch GIA1 and GIA2, to verify location of problem: – If problem follows the unit, replace GIA1. • Check GIA1/GMA 347 interconnect. • Replace GMA 347.
COM2 PTT – COM2 push-to-talk key is stuck.	The COM2 external push-to-talk (PTT) switch is stuck in the enabled (or “pressed”) state.	• Press the push-to-talk switch(s) again to cycle its operation. • Check push-to-talk switch(s) and wiring. • Switch GIA2 and GIA1, to verify location of problem: – If problem follows the unit, replace GIA2. • Check GIA1/GMA 347 interconnect. • Replace GMA 347.
COM1 TEMP – COM1 over temp. Reducing transmitter power.	The system has detected an over temperature in COM1.	• Check fan, wiring and air tubing for proper operation (if applicable). • Replace cooling fan if unable to determine if operating correctly. • Replace GIA1.
COM2 TEMP – COM2 over temp. Reducing transmitter power.	The system has detected an over temperature in COM2.	• Check fan, wiring and air tubing for proper operation (if applicable). • Replace cooling fan if unable to determine if operating correctly. • Replace GIA2.

NOTE

COM 1 and COM 2 remain operable in an over-temperature condition with reduced transmit power.

5.8.6 NAV Related Alerts

Message	Cause	Solutions
NAV1 SERVICE – NAV1 needs service. Return unit for repair.	The system has detected a failure in NAV1 receiver.	• Replace GIA1.
NAV2 SERVICE – NAV2 needs service. Return unit for repair.	The system has detected a failure in NAV2 receiver.	• Replace GIA2.

5.8.7 G/S Related Alerts

Message	Cause	Solutions
G/S1 SERVICE – G/S1 needs service. Return unit for repair.	The system has detected a failure in G/S1 receiver.	• Replace GIA1.
G/S2 SERVICE – G/S2 needs service. Return unit for repair.	The system has detected a failure in G/S1 receiver.	• Replace GIA2.
G/S1 FAIL – G/S1 is inoperative.	The system has detected a failure in G/S1 receiver.	• Switch GIA1 and GIA2 to verify location of problem: – If problem follows the unit, replace GIA. – If problem does not follow unit, check G/S1 antenna and cabling.
G/S2 FAIL – G/S2 is inoperative.	The system has detected a failure in G/S2 receiver.	• Switch GIA1 and GIA2 to verify location of problem: – If problem follows the unit, replace GIA. – If problem does not follow unit, check G/S2 antenna and cabling.

5.8.8 GPS Related Alerts

NOTE

Before troubleshooting, make sure no cell phones or devices using cell phone technology are turned on in the cabin (even in a monitoring state).

Message	Cause	Solutions
GPS1 SERVICE – GPS1 needs service. Return unit for repair.	The System has detected a failure in GPS1 receiver.	• Replace GIA1.
GPS2 SERVICE – GPS2 needs service. Return unit for repair.	The system has detected a failure in GPS2 receiver.	• Replace GIA2.
GPS1 FAIL – GPS1 is inoperative.	The system has detected a failure in GPS1 receiver.	• Switch GIA1 and GIA2, to verify location of problem: – If problem follows the unit, replace GIA1. If problem does not follow the unit, check GPS1 antenna and cabling.
GPS2 FAIL – GPS2 is inoperative.	The system has detected a failure in GPS2 receiver.	• Switch GIA1 and GIA2, to verify location of problem: – If problem follows the unit, replace GIA2. – If problem does not follow the unit, check GPS2 antenna and cabling.
GPS NAV LOST – Loss of GPS navigation. GPS fail.	The system has lost GPS navigation information.	• Make sure that the area the aircraft was traveling through did not have loss of GPS coverage. FAA NOTAMs may be issued for periods of outages, or the US Coast Guard website http://www.navcen.uscg.gov/gps/gpsnotices/default.htm will have notices posted. • Using the MFD AUX – GPS Status page, make sure the signal strength bars are not erratic. If so, this indicates outside interference is affecting the GPS receivers. Find and remove the source of interference (i.e. cell phones, FBO datalink antennas, etc.). • Check GPS antenna and cabling.

5.8.9 GIA Configuration Alerts

Message	Cause	Solutions
GIA1 CONFIG – GIA1 configuration error. Config service req'd.	The system has detected a GIA configuration mismatch.	• See Section 7 for GIA configuration instructions. • If problem persists, check config module harness for faults and replace if necessary.
GIA2 CONFIG – GIA2 configuration error. Config service req'd.		
GIA1 CONFIG – GIA1 audio config error. Config service req'd.	The system has detected a GIA audio configuration mismatch.	• See Section 7 for GIA configuration instructions. • If problem persists, check config module harness for faults and replace if necessary.
GIA2 CONFIG – GIA2 audio config error. Config service req'd.		
HW MISMATCH – GIA hardware mismatch. GIA1 communication halted.	The system has detected a non-WAAS GIA 63.	• Replace GIA with a WAAS unit.
HW MISMATCH – GIA hardware mismatch. GIA2 communication halted.		
MANIFEST – GIA1 software mismatch. Communication Halted.	The system has detected an incorrect software version loaded in GIA 1.	• Load correct software version.
MANIFEST – GIA2 software mismatch. Communication Halted.	The system has detected an incorrect software version loaded in GIA 2.	
GIA1 SERVICE – GIA1 needs service. Return unit for repair.	The system has detected a failure in GIA1.	• Replace GIA1.
GIA2 SERVICE – GIA1 needs service. Return unit for repair.	The system has detected a failure in GIA2.	• Replace GIA2.

5.9 GRS 77/GMU 44 RELATED ALERTS AND PROBLEMS

5.9.1 Common Problems

Symptom	Recommended Action
AHRS does not complete initialization	• Make sure a cell phone or a device using cell phone technology is not turned on (even in a monitoring state) in the cabin. • Make sure the GPS has acquired at least four satellites, has a 3D navigation solution, and a DOP of less than 5.0. This is particularly important if this issue appears during ground operation only. • Calibrate the GRS 77. • Check GRS 77 configuration module wiring for damage. • Check GRS 77 connector for bent pins. – If no damage can be found, replace GRS 77 configuration module. • If problem persists, replace the GRS 77.
Attitude appears unstable	• Make sure a cell phone or a device using cell phone technology is not turned on (even in a monitoring state) in the cabin. • Make sure the four GRS 77 mounting screws are tight. Finger tight is not sufficient, a screwdriver must be used to verify. • Make sure the mounting rack and airframe shelf are secure and all hardware and brackets are present (CAUTION - do not loosen the mounting rack hardware to the airframe shelf or the aircraft will need to be re-leveled and the PITCH/ROLL OFFSET procedure performed). • Make sure the GRS 77 connector is securely fastened and proper strain relief is provided. • Remove GRS 77 connector and make sure there are no bent pins. • Replace the GRS 77. • Contact Garmin for further troubleshooting if required.

5.9.2 GRS 77 Related Alerts

Message	Cause	Solutions
AHRS1 TAS – AHRS1 not receiving airspeed.	The GRS 77 #1 is not receiving airspeed information from the GDC 74A #1.	• Check GRS #1/GDC 74A #1 interconnect. • Replace the GDC 74A #1 • If problem does not clear, replace the GRS 77 #1
AHRS2 TAS – AHRS2 not receiving airspeed.	The GRS 77 #2 is not receiving airspeed information from the GDC 74A #2.	• Check GRS #2/GDC 74A #2 interconnect • Replace the GDC 74A #2 • If problem does not clear, replace the GRS 77 #2
AHRS1 GPS – AHRS1 using backup GPS source.	GRS 77 #1 is using a backup GPS source.	• Make sure a cell phone or a device using cell phone technology is not turned on (even in a monitoring state) in the cabin. • Check GPS status for GIA 1 and 2 on MFD - AUX GPS STATUS page. If one or both GPS receivers cannot acquire a position lock. Troubleshoot GPS problems using Sections 5.1.2 and 5.6.2. • Replace the GRS 77.
AHRS1 GPS – AHRS1 not receiving backup GPS information.	GRS 77 #1 is not receiving backup GPS information from either GIA 63W.	
AHRS1 GPS – AHRS operating exclusively in no-GPS mode.	The GRS 77 is operating in the absence of GPS.	
AHRS1 GPS – AHRS1 not receiving any GPS information.	GRS 77 #1 is not receiving GPS data from either GIA 63W.	
AHRS2 GPS – AHRS2 using backup GPS source.	GRS 77 #2 is using a backup GPS source.	• Make sure a cell phone or a device using cell phone technology is not turned on (even in a monitoring state) in the cabin. • Check GPS status for GIA 1 and 2 on MFD - AUX GPS STATUS page. If one or both GPS receivers cannot acquire a position lock. Troubleshoot GPS problems using Sections 5.1.2 and 5.6.2. • Replace the GRS 77.
AHRS2 GPS – AHRS2 not receiving backup GPS information.	GRS 77 #2 is not receiving backup GPS information from either GIA 63W.	
AHRS2 GPS – AHRS2 operating exclusively in no-GPS mode.	The GRS 77 #2 is operating in the absence of GPS.	
AHRS2 GPS – AHRS2 not receiving any GPS information.	GRS 77 #2 is not receiving GPS data from either GIA 63W.	
AHRS1 SRVC – AHRS1 magnetic field model needs update.	AHRS #1 magnetic field model has expired.	• Reference Garmin SB 0533 for update instructions.
AHRS2 SRVC – AHRS2 magnetic field model needs update.	AHRS #2 magnetic field model has expired.	

GRS 77 Related Alerts (continued)

Message	Cause	Solutions
MANIFEST – AHRS1 software mismatch. Communication Halted.	The system has detected an incorrect software version loaded in GRS 77 #1.	• Load correct software version in the GRS77.
MANIFEST – AHRS2 software mismatch. Communication Halted.	The system has detected an incorrect software version loaded in GRS 77 #2.	
AHRS MAG DB – AHRS magnetic model database version mismatch.	The system has detected a magnetic model database version mismatch.	• Reference Garmin SB 0533 for update instructions.

5.9.3 GMU 44 Related Alerts

Message	Cause	Solutions
MANIFEST – GMU1 software mismatch. Communication Halted.	The system has detected an incorrect software version loaded in GMU 44 #1.	• Load correct software version in the GMU44.
MANIFEST – GMU2 software mismatch. Communication Halted.	The system has detected an incorrect software version loaded in GMU 44 #2.	
HDG FAULT – AHRS1 magnetometer fault has occurred.	A fault has occurred in GMU 44 #1.	• Check GMU 44/GRS 77 interconnect for faults • Replace GMU 44 #1 • If problem persists, replace GRS 77 #1
HDG FAULT – AHRS2 magnetometer fault has occurred.	A fault has occurred in GMU 44 #2.	• Check GMU 44/GRS 77 interconnect for faults. • Replace GMU 44 #2 • If problem persists, replace GRS 77 #2

5.10 GDC 74A RELATED ALERTS AND PROBLEMS

5.10.1 Common Problems

Symptom	Recommended Action
Altitude is different than standby altimeter	• Perform a pitot/static check (see the Cirrus Maintenance Manual for procedure). Allow the GDC 74A to warm up for fifteen minutes before checking accuracy, see Garmin Service Advisory 0606. • Determine which instrument is outside limits and recalibrate or replace. Note: Both units may individually be in spec but show a difference in altitude. Do not return a GDC 74A to Garmin for service if not outside limits. • If GDC is outside limits, recalibration may be performed in accordance with Section 5.9.
GDC 74A Config file does not load.	• Replace GDC 74A config module. • If problem persists, replace GDC 74A config module wire harness.

5.10.2 GDC 74A Related Alerts

Message	Cause	Solutions
MANIFEST – GDC 74A#1 software mismatch Communication halted.	The system has detected an incorrect software version loaded in the GDC 74A #1.	• Load correct software version.
MANIFEST – GDC 74A #2 software mismatch Communication halted.	The system has detected an incorrect software version loaded in the GDC 74A #2.	

5.11 GDC 74A Field Calibration Utility

NOTE

Field calibration of GDC 74A units requires a pressure control system with altitude accuracy equal to or better than ±5 feet at sea level, ±15 feet at 30,000 feet, and ±15 feet at 41,000 feet. For calibration of the GDC 74A, the pressure control system must control altitude automatically.

Purpose

The GDC 74(X) Field Calibration utility (P/N T06-A0156-00) is designed to adjust the calibration of GDC 74A units that have failed the 14 CFR Part 43 Appendix E tests due to altitude drift.

Limitations

- These procedures should be performed on the bench (not in the aircraft) at room temperature.
- The GDC 74(X) Field Calibration utility should only be used to correct errors due to altitude drift.
- If the drift is greater than the limits defined in the GDC 74(X) Field Calibration utility at any of the test points, the utility will not allow the calibration to continue and the GDC 74A unit must be returned to Garmin.
- If the GDC 74A unit does not pass 14 CFR Part 43 Appendix E after the calibration utility has been run, the GDC 74A unit should be returned to Garmin.

Requirements

- GDC 74A unit.
- Power supply (14/28V, 500mA).
- PC with a Serial Port or serial port adapter.
- Pressure control system capable of generating the correct static pressures for 0 feet, 11,000 feet, 30,000 feet, and 41,000 feet.
- Fabricate a cable built to interface a GDC 74A to a PC Serial Port (see Figure 5-10). The cable is not available from Garmin.

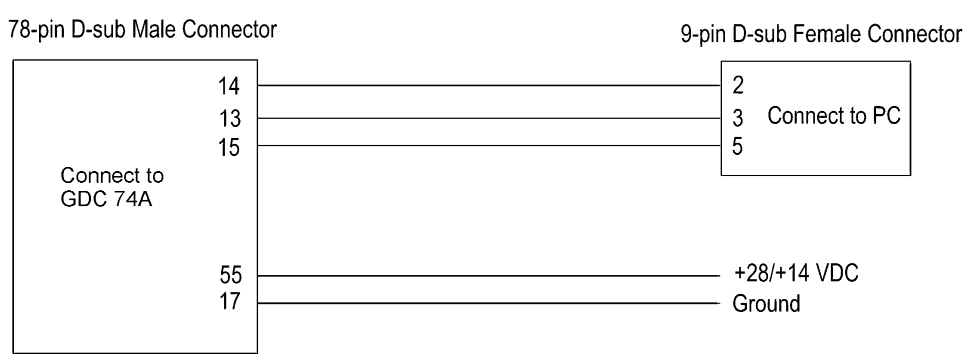


Figure 5-10. GDC 74A - PC Interface Cable

Software Installation

Before beginning the software field upgrade procedure, the GDC 74(X) Field Calibration utility must be downloaded from the Garmin website.

1. Enter the Dealer Resource portion of the Garmin website (www.garmin.com).
2. From the Technical Resource list, click on the link for the GDC 74(X) Field Calibration utility.
3. Follow the instructions to save the file to the PC (it is recommended to create a folder 'C:\Garmin' as a target directory for the file).

Procedure

1. Connect the GDC 74A to the pressure control system.
2. Connect the GDC 74A to the PC serial port using the GDC 74A – PC Interface Cable (Figure 5-10).
3. Connect the GDC 74A PC Interface Cable to the power supply (Figure 5-10).
4. Power on the GDC 74A and the pressure control system.
5. Set the pressure control system to a pressure altitude of 40,000 feet and determine that leakage is less than 140 feet per minute.
6. Run GDC_FieldCal.exe.
7. Click on 'Begin Field Calibration'.

NOTE

The GDC 74(X) Field Calibration utility requires that the GDC 74A and the pressure control system be powered on for a minimum of 20 minutes before calibration.

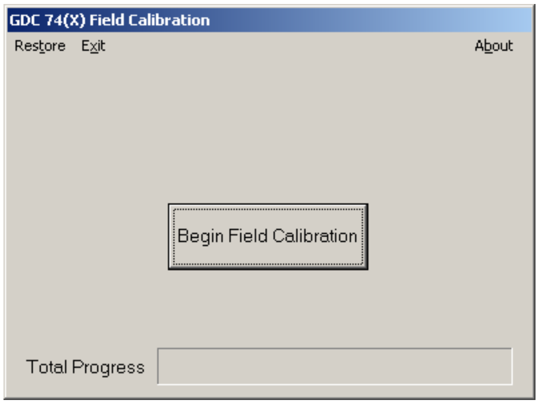


Figure 5-11. GDC 74A Field Calibration Utility, Main Page

8. Select the Serial Port on the PC that will be used to communicate with the GDC 74(X), and click 'OK'.

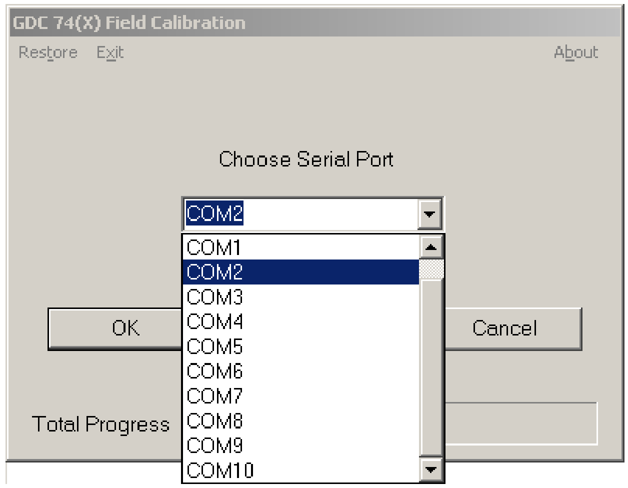


Figure 5-12. Serial Port Pull-down List

9. After communication with the GDC 74A is established, the 'Full Backup' screen appears while a full backup of the original unit setting is saved to a file named BKUP_(serial_num)_YYYYMMDD_ HHMMSS.txt. This file can be used by Garmin to restore the unit to the original settings if necessary.
10. After the full backup file has been created, the 'Prepare To Take Measurements' screen appears while the program retrieves the unit type from the GDC 74A.
11. After the unit type has been determined, the 'Set altitude to 0 ft' screen (Figure 5-13) appears.
12. According to the on-screen instructions, set the pressure control system to a pressure altitude of 0 feet.
13. Allow the on-screen altitude reading to stabilize, then click 'OK'.

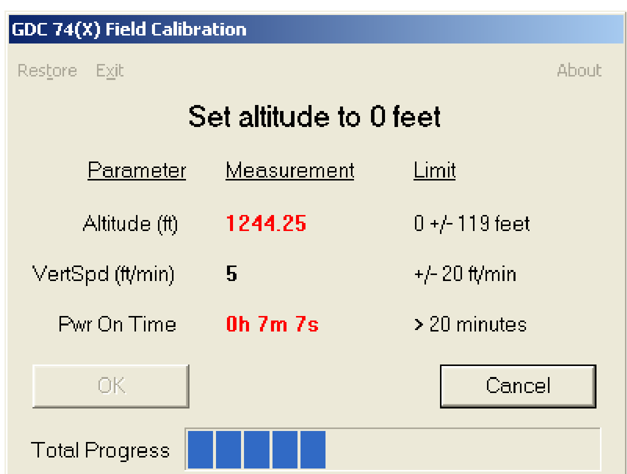


Figure 5-13. 0 Feet Calibration Screen

NOTE

If any of the three measurements (Altitude, Vertical Speed, Power On Time) are outside of their respective displayed limits, the displayed measurement will appear in red, and the 'OK' button will be unavailable (grayed-out). If successful calibration is not achievable, clicking 'Cancel' will halt the program and produce the following popup message:

Figure 5-14. Calibration Failed Screen

14. After the 0 feet calibration is complete, the 'Set altitude to 11,000 ft' screen appears.
15. According to the on-screen instructions, set the pressure control system to a pressure altitude of 11,000 feet.
16. Allow the on-screen altitude reading to stabilize, then click 'OK'.
17. After the 11,000 feet calibration is complete, the 'Set altitude to 30,000 ft' screen appears.
18. According to the on-screen instructions, set the pressure control system to a pressure altitude of 30,000 feet.
19. Allow the on-screen altitude reading to stabilize, then click 'OK'.
20. After the 30,000 feet calibration is complete, the 'Set altitude to 41,000 ft' screen appears.
21. According to the on-screen instructions, set the pressure control system to a pressure altitude of 41,000 feet.
22. Allow the on-screen altitude reading to stabilize, then click 'OK'.
23. After the altitude calibrations are complete, the 'Program Calibration to Unit?' screen (Figure 5-15) appears. Click 'OK' to program the new calibration to the GDC 74(X) unit.

NOTE

Before the new calibration is written to the unit, the program stores the current calibration to a file named CAL_(serial_num)_YYYYMMDD_HHMMSS.txt that can be used to restore the original calibration back to the unit if needed (refer to the "To Restore Original Calibration" section).

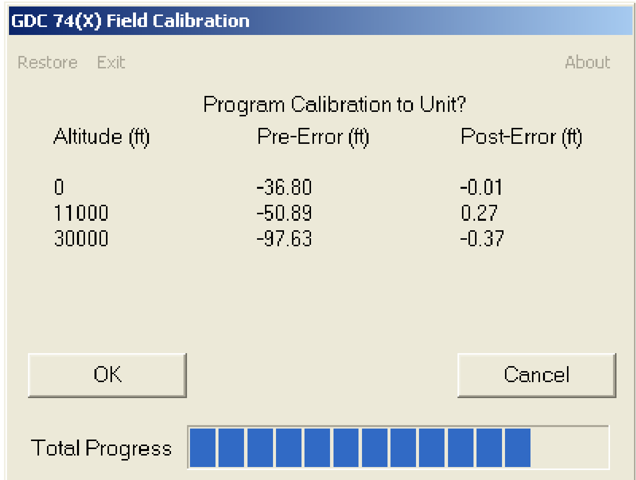


Figure 5-15. Program Calibration to Unit Screen

24. Make sure the pop-up cal result window shows 'PASSED', then press 'OK' to confirm message.

Figure 5-16. Field Calibration Result Screen

25. Return the pressure control system to ambient pressure before disconnecting the pitot and static lines from the GDC 74A.
26. Click on 'Exit' in the upper left corner to exit the program.
27. The field calibration is now completed, the unit may be installed in the aircraft (according to the instructions in this manual) to perform the operational system testing portion of 14 CFR Part 43 Appendix E.

To Restore Original Calibration (if needed)

If needed, the original calibration can be restored to the unit according to the following procedure:

1. Run GDC_FieldCal.exe.
2. Select 'Restore' from the upper left-hand corner of the page.
3. Select the CAL_(serial_num)_YYYYMMDD_HHMMSS.txt calibration file to restore to the unit and click 'Open'.

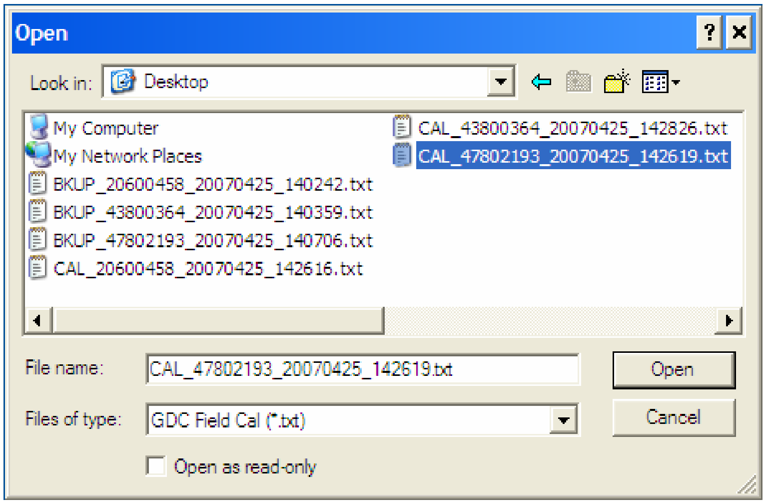


Figure 5-17. Calibration Files Screen

4. Select the Serial Port on the PC that will be used to communicate with the GDC 74(X), and click 'OK'. A progress bar screen appears while the calibration is being restored to the unit.
5. If cal restoration is successful, the screen will display 'Completed' before returning to the main entry screen.
6. Click on 'Exit' in the upper left corner to exit the program.
7. The original calibration is now restored, the unit may be installed in the aircraft (according to the instructions in this manual) to perform the operational system testing portion of 14 CFR Part 43 Appendix E.

Calibration File Storage

Save copies of the calibration (BKUP and CAL) files for permanent storage. These files are located in the C:\Garmin directory, or in the same directory where the GDC_FieldCal.exe file resides. Email copies of these files to avionics@garmin.com. Please enter “GDC 74(X) Field Calibration Data” in the subject line, as shown in Figure 5-18.

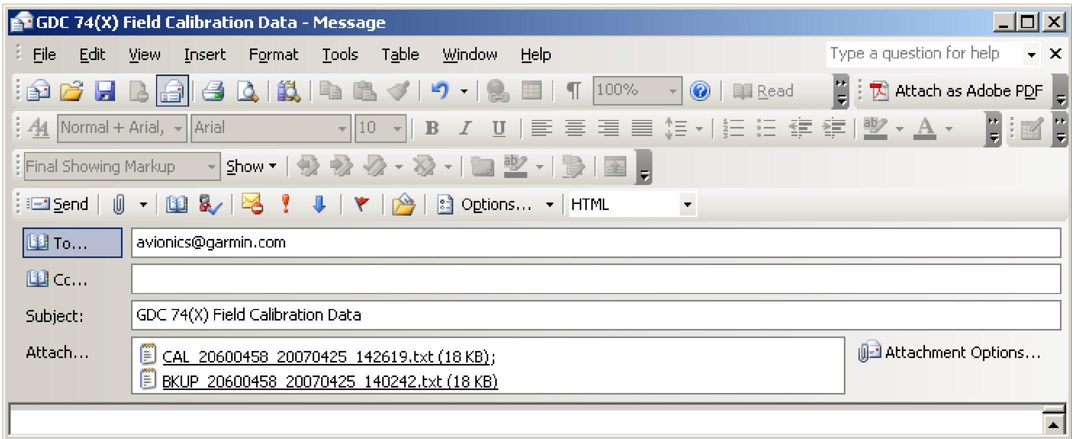


Figure 5-18. Example Post-Calibration E-mail

Software Version

1. Click on ‘About’ in the upper right hand corner of the program, the software version is displayed.

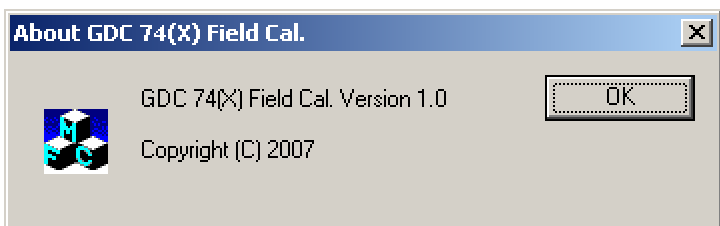


Figure 5-19. About Screen

2. Click ‘OK’ to return to previous screen.

5.12 GEA 71 Related Alerts and Problems

Message	Cause	Solutions
GEA1 CONFIG – GEA1 configuration error. Config service req'd.	The system has detected a GEA 71 configuration mismatch.	• See Section 7 for instructions on configuration. • If problem persists, check config module harness for faults and replace if necessary.
MANIFEST – GEA1 software mismatch. Communication Halted.	The system has detected an incorrect software version loaded in GEA 71.	• Load correct software version.
Discharged standby battery Indication.	ALT1, ALT2, and BAT1 circuits needs to be recalibrated	• Refer to Section 5.10.1 for the High Side Current Monitor calibration Procedure.

5.12.1 GEA 71 High-Side Current Monitor Calibration Procedure

NOTE

This procedure must be performed anytime a GEA is replaced, or anytime GEA configuration is loaded to an aircraft in the field. If none of the aforementioned conditions exist, check accuracy of amps readings to determine if HSCM calibration is necessary.

In the Aircraft

1. Make sure that the sensor (ALT1, ALT2, and BAT1 shunts) in question has been energized at operating voltage, but is isolated from current flow (both high and low inputs to the GEA should be at the same high voltage).

On the MFD

1. Power up PFD in config mode.
2. Power on the MFD in configuration mode and select the HSCM CALIBRATION page (third page in the CAL page group).
3. Unlock the page using the softkey sequence 2, 3, 4, 5.
4. Select the appropriate GEA from the HSCM ENABLED GEA selection box.

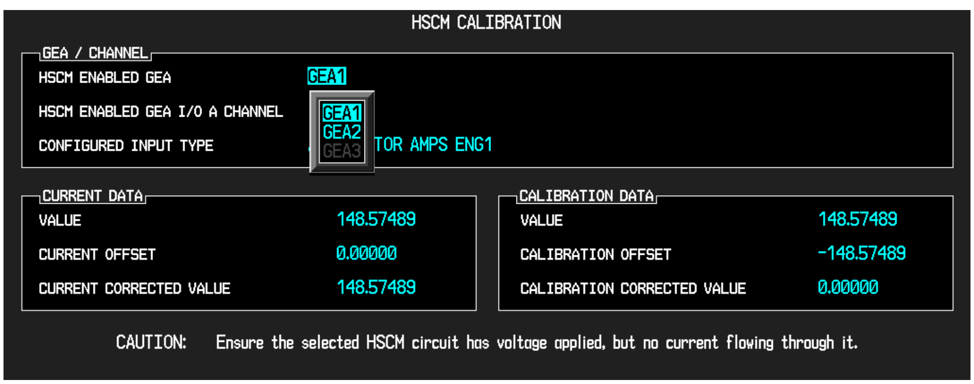


Figure 5-20. HSCM Enabled GEA Selection Box

5. Select the appropriate channel from the HSCM ENABLED GEA I/O CHANNEL selection box. Make sure the displayed sensor in the CONFIGURED INPUT TYPE field matches the sensor desired for calibration.

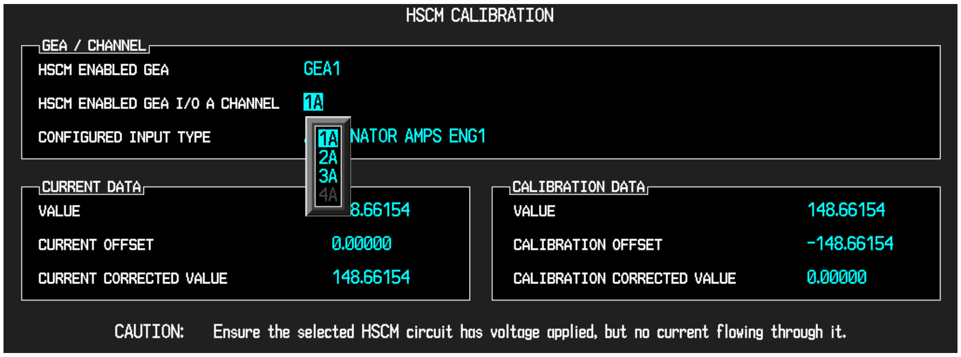


Figure 5-21. HSCM Enabled GEA I/O A Channel Selection Box

6. Make sure all displayed Current and Calibration data is appropriate:
    a. CURRENT DATA:
        i. VALUE –the instantaneous reading from the GEA if the current offset was zero (any calibration offset has been taken out).
        ii. CURRENT OFFSET –the calibration offset that is presently loaded on the channel (this will be zero if the channel has never been calibrated).
        iii. CURRENT CORRECTED VALUE – the current output of the GEA channel with the above current offset applied (what would be displayed on the EIS strip if the GDU was in normal mode). If the channel is calibrated and the calibration setup is correct, this parameter should be near zero, and fluctuation should be minimal. Be sure to take note of the range of fluctuation.
    b. CALIBRATION DATA:
        i. VALUE –the instantaneous current reading from the GEA if the current offset was zero (any calibration has been taken out).
        ii. CALIBRATION OFFSET –the instantaneous calculation of what the offset should be in order to properly calibrate the channel (assuming the shunt is properly set up for calibration, see step 1).
        iii. CALIBRATION CORRECTED VALUE - the output of the GEA channel if the above offset were applied (should always be zero).
7. Press the STORE softkey, the following calibrate confirmation box appears:

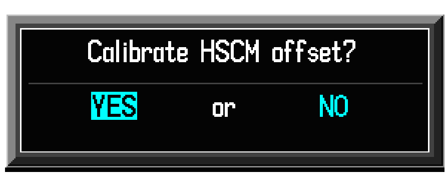


Figure 5-22. Calibrate Confirmation Box

8. Press the ENT Key to accept the CALIBRATION OFFSET value. The instantaneous CALIBRATION OFFSET value is stored as the CURRENT OFFSET.

9. The system will now re-verify the GEA configuration (this may take several minutes). During this time the box shown in Figure 5-23 is displayed. ***Do not perform any actions until this is complete.***

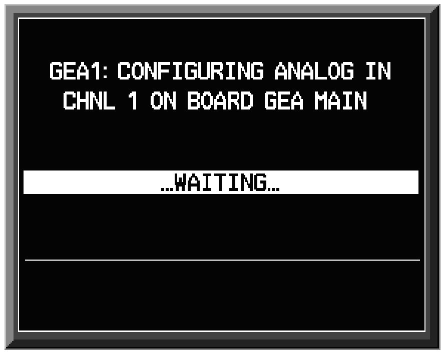


Figure 5-23. Configuration Verification Processing

10. When the configuration is complete, press the ENT key to confirm.

Figure 5-24. Configured Confirmation Box

11. Once verification is complete, the CURRENT CORRECTED VALUE should be zero, within a range of fluctuation that is equal to or less than noted prior to calibration. If this is the case, the calibration has been successfully completed.

5.13 GTX 32/33 RELATED ALERTS AND PROBLEMS

Message	Cause	Solutions
XPDR1 CONFIG – XPDR1 configuration error. Config service req'd.	The system has detected a GTX 32/33 configuration mismatch.	• Perform a SET>ACTV configuration reset on the GTX Config page. • For a GTX33, make sure the aircraft registration is present in the GTX Configuration page. • If error is still present, reload config files from a loader card. See Section 7.
MANIFEST – GTX1 software mismatch. Communication Halted.	The system has detected an incorrect software version loaded in GTX 32/33 #1.	• Load correct software version
XPDR1 SRVC – XPDR1 needs service. Return unit for repair.	The system has detected a failure in GTX 32/33.	• Replace GTX 32/33.
XPDR1 FAIL – XPDR1 is inoperative.	GTX 32/33 is not responding.	• Check GIA1/2 to GTX32/33 data paths for failures according to Section 5.3. • Replace GTX 32/33.

5.14 GDL 69/69A RELATED ALERTS AND PROBLEMS

5.14.1 Common Problems

<table>
<tr><th>Symptom</th><th>Recommended Action</th></tr>
<tr><td>No XM audio is heard</td><td rowspan="2">

Check the PFD Alert Window for MFD or GDL configuration or software error messages. Correct any errors before proceeding.
Make sure the GDL69/69A software option has been loaded to the aircraft by the presence of the MFD AUX – XM RADIO page.
Make sure the following items are not preventing the audio panel from distributing XM audio (reference applicable Cirrus Perspective Pilot’s Guide for intercom operation and isolation modes):

Make sure nothing is plugged into the Music 1 or 2 jacks. Make sure the XM volume is not muted on the MFD AUX – XM RADIO page. Make sure the headphone volume is turned up.
Make sure the COM squelch is not open. Make sure the ICS squelch is not open. Make sure the marker beacon tones are not being received.
Go to the AUX – SYSTEM STATUS page on the MFD and make sure the unit is online. If a red X is present, make sure the unit is receiving power at the rack connector.

Restart the PFD and MFD in configuration mode and go to the GDL page.

Make sure unit is active. Make sure the signal number is “2” or “3”. If it is “0” or “1”, check the GDL 69/69A antenna and cabling for faults.
Reseat the GDL 69/69A to make sure the coax connector is fully seated.
If unit is not active, contact XM Customer service at 1-800-985-9200 to have a refresh signal sent to your unit. You will need to provide them the Audio Radio ID (and Data Radio ID number for XM weather) numbers. Also verify with XM that the correct weather package (Aviator Lite or Aviator) is on the account, and that no traffic service has been activated against that Radio ID. The unit must be on for approximately one hour after the request for the refresh has been sent to receive the signal.
Alternatively, you may also go to XM’s website at http://www.xmradio.com/refresh/ and enter the radio ID’s to have a refresh signal sent.

If there is still problems receiving weather products after performing the above step, call XM and have the account deactivated, and a new account activated to clear out any corrupt account information. The unit must be on and receiving XM to receive the deactivation signal, then the reactivation signal. Make sure a good ground connection exists through the aircraft between the MFD and the GDL69/69A unit. Reference the Cirrus Maintenance Manual for instructions on how to check bonding and ground points. If problem persists, replace the GDL 69/69A.

</td></tr>
<tr><td>No XM weather information is displayed</td></tr>
</table>

5.14.2 GDL 69/69A Related Alerts

Message	Cause	Solutions
GDL 69 FAIL – GDL 69 has failed.	The system has detected a failure in the GDL 69A.	• If a GDL 69 is not installed, deactivate the option by performing the following steps: 1. Turn the system on in Configuration Mode. 2. On the PFD, go to the “System Configuration” Page in the System Group. 3. Turn the Cursor on by pressing the FMS Knob. 4. The “GDL69” text should be flashing. Press the ENT key to turn the GDL 69 off (indicated by the green light box changing to black). 5. Turn the system off. • Replace GDL 69A. • Check GDL 69A antenna and cabling. • Check the GDL 69A and MFD interconnect.
GDL69 CONFIG – GDL 69 configuration error. Config service req’d.	The system has detected a GDL 69A configuration mismatch.	• See Section 7 for GDL configuration instructions.
MANIFEST – GDL software mismatch. Communication halted.	The system has detected an incorrect software version loaded in GDL 69A.	• Load correct software version.

5.15 GMC 705 RELATED ALERTS AND PROBLEMS

Message	Cause	Solutions
GMC CNFG – GMC Config error. Config service req'd.	The system has detected a GMC 705 configuration mismatch.	• Load GMC configuration files, see Section 7. • Replace GMC. • If problem persists, check config module wiring for faults and replace if necessary.
GMC FAIL – GMC is inoperative.	The system has detected a failure in the GMC 705.	• Replace the GMC 705
MANIFEST – GMC software mismatch. Communication halted.	The system has detected an incorrect software version loaded in the GMC 705.	• Load correct software version

5.16 AFCS SYSTEM TROUBLESHOOTING

The information in this section is specific to the GFC 700. If a problem is encountered during the operation of the GFC 700, the pilot and technician should first evaluate the overall status and condition of the system on the AUX – System Status Page (MFD). Observe any alert messages, annunciations, or other abnormal behavior to help isolate a fault.

5.16.1 Annunciations and Alerts

The GFC 700 AFCS Annunciation field is located above the airspeed tape on the PFD as shown in Figure 5-25.

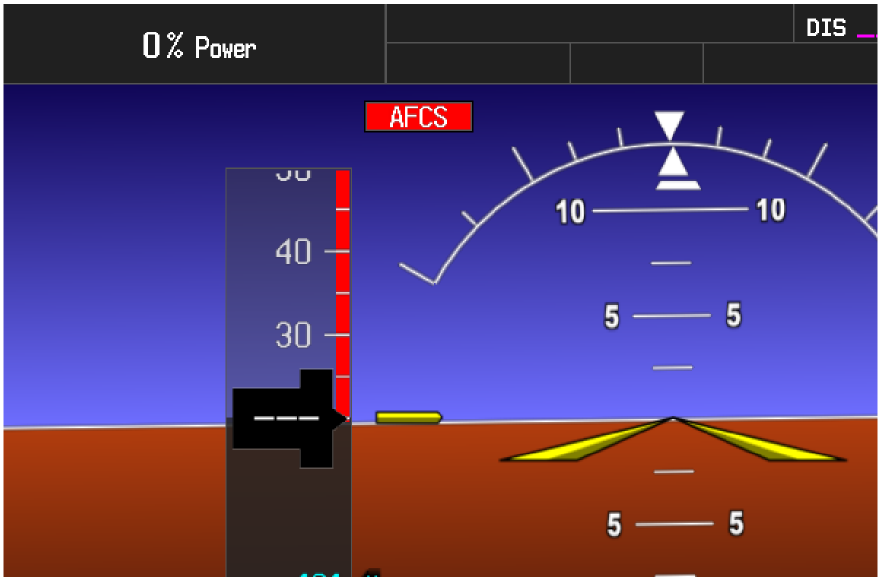


Figure 5-25. AFCS Annunciation Field

The following annunciations may appear in the AFCS Annunciation field:

Annunciation	Condition	Solutions
AFCS	AFCS System Failure	• Check the PFD ALERT Window for any GIA, GRS, GDC, GSA or GTA error messages. Correct all before proceeding. • Make sure no red X's are present on the MFD and PFDs. • Go to the MFD AUX - SYSTEM STATUS page and make sure all LRUs have a 'green' check. • Troubleshoot according to Section 5.14.2.
PTCH	Pitch Axis Failure	• Check the AUX – SYSTEM STATUS page to see if the servo is online (green check). • Make sure the affected servo is receiving power. • Check the servo wiring and connector. • Make sure the PTRM switches are not stuck. • Replace the affected servo if the failure condition still exists.
YAW	Yaw Axis Failure	
PTRM	Pitch Trim Axis Failure	
ROLL	Roll Axis Failure	
↓ELE	Elevator Mistrim Down	• Make sure the GTA 82 is online at the AUX – SYSTEM STATUS page. • Check the GTA 82 and trim motor servo for proper operation by exercising the pitch trim controls. • Check the GTA 82 and trim motor servo wiring and connector. • Make sure the GTA 82 is receiving power. • Check the aircraft trim control system rigging. • Replace the GTA 82 if Mistrim condition still exists.
↑ELE	Elevator Mistrim Up	
AIL→	Aileron Mistrim Right	• Move the roll trim motor via the electric trim switch on the stick. The aircraft roll trim can mechanically cause an aileron Mistrim. • Check for possible fuel imbalance. Disregard if this is the cause. • Check aileron control system rigging. • Replace the roll servo. • Replace the roll trim motor if Mistrim condition still exists.
←AIL	Aileron Mistrim Left	
PFT	Pre-Flight Test	• Reset system power. • Allow the system to complete pre-flight tests. The preflight test should finish within two minutes. If the test, fails the red 'PFT' annunciation is shown. In case of PFT failure, troubleshoot according to Section 5.14.2.
PFT		

5.16.2 GFC 700 Pre-Flight Test and Troubleshooting

This section helps the technician determine why the GFC 700 Pre-Flight Test (PFT) indicated by the red PFT annunciation has failed. The PFT is performed by both GIA's at system startup, and needs to pass on both GIA's before the autopilot can be engaged.

The PFT is only started if the AHRS has aligned, the GIA's and servos are configured, and the certification gains are valid. If the PFT does not complete after one minute after initialization, it will fail.

After the system PFT has passed, it will be performed again if a servo resets, if the autopilot servo breaker is reset, or if the cross-side GIA restarts it.

The PFT failure fault is logged in the GIA Maintenance Log and not in the Servo Maintenance Logs unless the GIA log fault identifies a servo problem.

NOTE

Thoroughly understanding the operation of the system in configuration mode before starting this procedure. The GFC Status Page may be used to check the status of the servos as an aid in troubleshooting.

To access the GIA and GSA/GTA Maintenance Logs

1. Start the system in configuration mode.
2. Use the FMS knob on the PFD to display the Diagnostics Terminal Page in the system group. This page allows the technician to view maintenance logs associated with the GFC 700.
3. Choose 'GIA 1' or 'GIA 2' in the LRU window.
4. In the SERVO window, choose 'NONE' to view the GIA Maintenance Log, or choose a servo to view their logs.
5. Using the FMS knob, choose 'VIEW MAINTENANCE LOG' in the COMMAND window.
6. Press the ENT key.
7. When the Maintenance Log data starts to display in the OUTPUT window, you may see "More...press any key to continue..." at the bottom of the OUTPUT window. This informs you there is more data to display and the system has paused allowing you to view the data before continuing. To see more of the data, reselect the "VIEW MAINTENANCE LOG" in the COMMAND window and press the ENT key. The "...press any key to continue..." function is not active at this time.
8. Scroll through the OUTPUT list by pressing the OUTPUT softkey.

The GIA Maintenance Log can record any of the following faults:

- **FCS Task not started: Bad gains**

The FCS task has not started because the gains are not present or have been corrupted.

Reload the gain files to correct.

- **FCS Task not started: Gain structure out of range**

The FCS task has not started because the gains are not compatible with the GIA software.

Reload the gain files to correct.

- **PFT FAIL: Timeout, <STEP>**

Pre-flight test has failed because the specified step has not passed in the allotted time. See the GIA pre-flight steps for a description of the possible values for **<STEP>** on the failed GIA and for corrective actions.

- **PFT FAIL: Cross GIA Failed, State: <STEP>**

Pre-flight test has failed on opposite GIA. **<STEP>** specifies the pre-flight test step on the selected GIA was in progress when the pre-flight test failed on the opposite GIA. See the GIA pre-flight steps for a description of the possible values for **<STEP>** on the failed GIA and for corrective actions.

- **PFT FAIL: <STEP>**

Pre-flight has failed because the step specified has failed. See the GIA pre-flight test steps for a description of the possible values for **<STEP>** on the failed GIA and for corrective actions.

- **AHRS MON invalid: <STATE>**

The AHRS monitor has detected that the AHRS data is invalid. The possible values for **<STATE>** are:

Mon Prmtr Invalid: The ARINC 429 data used by one of the monitors has not been received.

Attitude Prmtr Invalid: The ARINC 429 pitch or roll angle has not been received.

Exceeded Attitude Limits: The pitch or roll angle has exceeded the engagement limits.

Cross Hdg Accel Fail: Cross heading acceleration monitor failed.

Vert Accel Fail: Vertical acceleration monitor failed.

Fltrd Cross Hdg Accel Fail: Filtered cross heading acceleration monitor failed.

Fltrd Vert Accel Fail: Filtered vertical acceleration monitor failed.

Roll Accel Fail: Roll acceleration monitor has failed.

Normal Accel Fail: Normal acceleration has failed.

Troubleshoot the GRS 77 for the cause of the failure.

- **Stuck switch invalidated parameter: <AXIS>**

A MET switch in the specified axis is stuck.

Check the MET (trim) switches for proper operation.

- **PRMTR: <PARAMETER> MODE:<MODE> Parameter lost**

The mode specified by **<MODE>** has disengaged because the parameter specified by **<PARAMETER>** has become invalid. The following is a list of some of the possible values for **<PARAMETER>:**

AD TDM Comm Valid: The specified mode has been disengaged because communication with the servos, via the Time Division Multiplexer protocol, has been lost.

Troubleshoot possible loss of communication paths to servos or loss of servo/AP disconnect power to the servos.

AP Pitch MET not stuck: The specified mode has been disengaged due to a stuck pitch MET switch.

Check the MET (trim) switches for proper operation.

GIA Pre-Flight Test Steps

- **PFT Step 0: System initializing, verify GFC powered**

This step checks to make sure the GFC is powered up.

Make sure the GIA is connected to the autopilot disconnect on the GFC Configuration page.

Make sure all configured servos are communicating on the System Status page.

- **PFT Step 1: System initializing, verify GIA audio is valid**

This step checks to make sure the GIA audio region has been loaded and configured.

Load GIA audio files to correct.

- **PFT Step 2: System initializing, verify required servos are configured**

This step checks to make sure the current servo configuration matches the servo configuration specified in the certification gain file.

Reload the gain files to correct.

- **PFT Step 3: System initializing, verify selected side**

This step checks to make sure the PFD is online and sending the selected AFCS side data over HSDB to the GIA.

Make sure the PFD is turned on.

Make sure the Ethernet connection from the PFD to the GIA is functioning.

- **PFT Step 4: System initializing, verify AHRS monitor**

This step checks to make sure the AHRS monitor is valid and not reporting an AHRS failure. NOTE: AHRS monitor will be assumed valid if on the ground.

Make sure the GRS 77 and GDC 74A are turned on and sending valid data.

- **PFT Step 5: System initializing, verify configured servos are valid**

This step checks to make sure that none of the servos are reporting any type of failure. Note that trim servos will report a failure on stuck MET switches.

Make sure the MET switch is not stuck.

Cycle power on all servos.

- **PFT Step 6: System initializing, verify cross GIA valid**

This step checks to make sure the cross-side GIA is online and communicating with all servos from ARINC 485 data lines. The cross-side GIA must also pass its AHRS monitoring.

Make sure both GIAs are online and communicating with all servos.

- **PFT Step 7: Verify cross GIA initialized**

This step checks to make sure the cross-side GIA is initialized.

Cycle power on all servos and GIAs.

Make sure the PFD and MFD are turned on.

- **PFT Step 8: Verify servo type**

This step checks to make sure the servos are the correct type.

Make sure the servos are correct type.

- **PFT Step 9: Verify servo first certification data**

This step checks to make sure the servos and the GIAs have the same certification gains.

Reload the certification gains to all GIAs and servos.

- **PFT Step 10: Verify servo second certification data**

This step checks to make sure the servos and the GIAs have the same certification gains.

Reload the certification gains to all GIAs and servos.

- **PFT Step 11: Updating servo RTC**

This step sets the servo system time to the GIA system time.

If fails this step, GIA’s cannot communicate with servos. Check for GIA/servo data path issues and power/AP disconnect loss.

- **PFT Step 12: Verify servo PFT status**

This step checks to make sure all servos have passed their own pre-flight test.

- **PFT Step 13: Verify AP disconnect enabled**

This step checks to make sure GIA 1, GIA 2, and all servos are connected to the 28 volt autopilot disconnect.

Make sure the autopilot disconnect is connected to all GIAs and servos and is registering 28 volts.

Make sure the autopilot disconnect switch is not pressed.

- **PFT Step 14: Verify servo validity**

This step checks to make sure all servos are online and communicating with valid data.

Make sure all servos are turned on and communicating.

- **PFT Step 15: Verify cross GIA PFT is completed**

This step checks to make sure the cross-side GIA is also on step 14.

Cycle power on all servos and GIAs.

Make sure the PFD and MFD are turned on.

- **PFT Step 16: PFT completed**

The pre-flight test is successfully completed.

- **PFT Step 17: PFT failed**

The pre-flight test has failed.

Servo Faults and Troubleshooting

A status message is logged to the corresponding servo control or maintenance log whenever a servo fault occurs. This information is also accompanied by a time and date stamp. An "RTC DATE" entry is made every time a servo is powered on, and is normally not useful for troubleshooting.

The following is a listing of possible faults that could be reported in a GSA fault log. Faults can occur in the monitor board processor or the control board processor, both of which are contained in the GSA.

Monitor Processor

The monitor processor contains the logs that are found in the following processors:

2 – Pitch Servo

4 – Roll Servo

6 – Yaw Servo

8 – Pitch Trim Servo

There are two main groupings of faults that can occur in the monitor processor:

The first grouping of faults can occur during the GSA unit pre-flight test (PFT). If there is a fault during PFT, the unit will not be able to transition to normal mode and the only way to clear this state is to cycle unit power. The second grouping of faults can occur during normal mode. These faults generally cause a disconnect of power to the GSA and report that a fault has occurred to the GIA.

The notes column indicates any actions that can be taken to troubleshoot the problem in the aircraft by the technician. **Any faults that are not listed here indicate an internal problem requiring replacement of the servo.** If the items in the notes column check out ok, replace the servo.

PFT Faults

MONITOR PFT STEP	NOTES
"INTERNAL COMM FAIL"	This can be a result of a failure on the other internal servo board, check faults on the other processor
"UNSW POWER INV"	Check unit power
"MON SOL PWR ON FAIL"	Check unit power and AP Disconnect power
"CTL SOL PWR ON FAIL"	Check unit power and AP Disconnect power
"SOL PWR FAIL"	Check unit power and AP Disconnect power
"CERT DATA UNINSTALLED"	Upload the certification gain file to the monitor board
"STRAP CODE MISMATCH"	Check the connector strap inputs to the unit

Normal Mode Faults

MONITOR FAULT	NOTES
"GIA DIS FAULT"	Check the AP Disconnect power into the unit
"HOST DATA DIF"	Check the AHRS wiring to the system
"HOST DATA INV"	Check the AHRS wiring to the system
"SVO PWR INV"	Check unit power and AP Disconnect power
“STRP CODE CHNG”	Check the connector strap inputs to the unit
“MET STUCK SWTCH”	Check the MET switch inputs into the system
“MET STATUS DIF”	Check the MET switch inputs into the system

Control Processor

The control processor contains the following logs:

3 – Pitch Servo

5 – Roll Servo

7 – Yaw Servo

9 – Pitch Trim Servo

There are two main groupings of faults that can occur in the control processor. The first grouping of faults can occur during the GSA unit pre-flight test (PFT). If there is a fault during PFT, the unit will not be able to transition to normal mode and the only way to clear this state is to cycle unit power.

The second grouping of faults can occur during normal mode. These faults generally cause a disconnect of power to the GSA and report that a fault has occurred to the GIA.

The notes column indicates any actions that can be taken to troubleshoot the problem in the aircraft by the technician. **Any faults that are not listed here indicate an internal problem requiring replacement of the servo.** If the items in the notes column check out ok, replace the servo.

PFT Faults

CONTROL PFT STEP	NOTES
"INT COMM TEST FAIL"	This can sometimes be a result of a failure on the other board, check faults on other processor
"CTL MOT PWR ON FAIL"	Check unit power and AP Disconnect power
"MON MOT PWR ON FAIL"	Check unit power and AP Disconnect power
"HALL 1 FAIL"	Check unit power and AP Disconnect power
"HALL 2 FAIL"	Check unit power and AP Disconnect power
"HALL 3 FAIL"	Check unit power and AP Disconnect power
"HALL 4 FAIL"	Check unit power and AP Disconnect power
"HALL 5 FAIL"	Check unit power and AP Disconnect power
"HALL 6 FAIL"	Check unit power and AP Disconnect power
"CURR OFFST FAIL"	Check unit power and AP Disconnect power
"SVO TYPE FAIL"	Check unit power and AP Disconnect power
"CERT DATA UNINSTALLED"	Upload the certification gain file to the Control board
"STRAP CODE MISMATCH"	Check the connector strap inputs to the unit

Normal Mode Faults

CONTROL FAULT	NOTES
"GIA DIS FAULT"	Check the AP Disconnect power into the unit
"HOST DATA DIF"	Check the AHRS wiring to the system
"HOST DATA INV"	Check the AHRS wiring to the system
"SVO PWR INV"	Check unit power and AP Disconnect power
“STRP CODE CHNG”	Check the connector strap inputs to the unit
“MET STUCK SWTCH”	Check the MET switch inputs into the system
“MET STATUS DIF”	Check the MET switch inputs into the system

Downloading GIA and GSA Maintenance Logs

If additional assistance is needed in troubleshooting autopilot faults, the maintenance logs can be downloaded to an SD card as a text file (.txt) and e-mailed to Garmin Aviation Product Support at avionics@garmin.com. Please call Garmin Aviation Product Support before sending a maintenance log to notify them you are sending it. This will prevent a delay in response. You may download multiple GIA and GSA/GTA maintenance logs to the same file, however in your e-mail to Garmin you must furnish the order in which they were downloaded (i.e. GIA1, then GIA2, then SRVO PTCH MON, then SRVO PTCH CTL, etc.).

1. Insert a FAT 32 formatted SD card into the top slot of the PFD before turning on the displays.
2. Power up PFD and MFD in the configuration mode.
3. On the PFD in the System page group, use the small FMS knob to scroll to the Diagnostics Terminal page.
4. Press the LG2CRD softkey at the bottom of the PFD. Make sure the softkey text grays out. This indicates the recording function is active and all text that is displayed in the OUTPUT window will be saved to the card.
5. Enable the cursor by pressing the FMS knob, select “GIA1” in the LRU drop down menu and then press the ENT key to select it.
6. Skip the SERVO box and move the cursor to the COMMAND box and select “View Maintenance Log” in the drop down menu then press the ENT key. The error log data will be displayed in the OUTPUT box. If you see the “more…press any key to continue” text at the bottom of the screen, you may need to reselect “View Maintenance Log” for GIA data to allow it to continue scrolling down the screen (pressing any key will not continue, disregard the text instruction you to do so). Continue to scroll through all the OUTPUT data until you see the text, “End of Fault Log”.
7. Move the cursor back to the LRU box, select “GIA2” in the LRU drop down menu and then press the ENT key to select it.
8. Skip the SERVO box and move the cursor to the COMMAND box and select “View Maintenance Log” in the drop down menu then press the ENT key. The error log data will be displayed in the OUTPUT box. If you see the “more…press any key to continue” text at the bottom of the screen, you may need to reselect “View Maintenance Log” for GIA data to allow it to continue scrolling down the screen (pressing any key will not continue, disregard the text instruction you to do so). Continue to scroll through all the OUTPUT data until you see the text, “End of Fault Log”.
9. If you need to download Servo fault logs (usually done at the request of Garmin Product Support), perform the following steps. Otherwise, skip to step 10.
    a. In the LRU box, you may select either “GIA1” or “GIA2”.
    b. In the SERVO box, choose a servo using the FMS knobs. Each servo contains two logs, one in the Monitor (MON) processor and one in the Control (CTL) processor. You must download both for each servo separately.

c. In the COMMAND box, select “View Maintenance Log” and press the ENT key.

d. The log will appear in the OUTPUT box. It will scroll to the end automatically. When it is complete, repeat steps a-c for the other servos in the aircraft. Be sure to note the order the servos were downloaded in including the Monitor or Control logs to email to Garmin Product Support. Without knowing the order in which the logs were downloaded, Garmin will be unable to process them and will ask for another full download.

10. Press the LG2CRD softkey to turn off the recording function.
11. Wait one minute for the system to save the data to the SD card.
12. While you are waiting for the data to be saved to the SD card, record the order of the LRU’s and/or Servos were downloaded so that you can provide that information to Cirrus or Garmin to help decipher the order of the error data.
13. Power down the system and remove the SD card.
14. Insert the SD card in the card reader of a laptop or desktop computer and open the “diag_buf_log.txt” file from the SD card using the WordPad program. Make sure all of the fault logs were downloaded by checking for the “End of Fault Log” message at the end of the GIA data. Also make sure the last servo log entry has the current date.
15. Insert the fault log as an attachment to an email and include the LRU order (how the data was downloaded) and send to Garmin Aviation Product Support at avionics@Garmin.com.

5.17 Troubleshooting the S-TEC 55x Interface

5.17.1 Interface Summary

- Autopilot computer is interfaced to GIA2 only
- Utilizes S-TEC pitch servo and Cirrus pitch trim motor for vertical control
- Utilizes Cirrus roll trim motor only for lateral control
- Utilizes S-TEC turn coordinator and S-TEC altitude hold chamber
- Mode annunciation and FD are displayed on the PFD in normal mode and on the MFD if the Perspective system is in reversionary mode
- Eaton switches on LH side of instrument panel annunciate “AP ON” (bottom half of switch) and “AP OFF/FD ON” (top half of switch)
- GPS steering utilizes an ARINC 429 buss between GIA2 and the 55x
- Altitude preselect data utilizes an RS 485 buss between GIA2 and the 55x
- Analog outputs from GIA2 drive the GS deviation, GS flag, Nav deviation, Nav flag to the 55x
- Pitch and Roll analog steering outputs from the 55x drive the FD bar inputs to GIA2 which in turn are displayed on the PFD
- Clock, Sync and Data are used to transfer the mode annunciation information from the 55x to GIA2 which in turn is displayed on the PFD or MFD in reversionary mode
- DC course and heading datum outputs from GIA2 drive the 55x associated inputs

5.17.2 Failure Modes

- Loss of MFD or GIA2
    - All mode annunciation removed from PFD
    - FD bars removed from PFD
    - S-TEC computer remains in basic altitude hold (if selected prior to loss) and HDG (if selected prior to loss) and is annunciated on the autopilot controller that way. Keep in mind that because there is no longer any communication between the autopilot computer and the Perspective system there is no way to input a heading error to drive the autopilot.
- Loss of PFD
    - No loss of autopilot functionality. Mode annunciation and FD transferred to MFD in reversionary mode

5.17.3 Troubleshooting Interface Problems

Use the following screenshots to help verify proper configuration and signal integrity. In some cases, monitoring signals is not possible via configuration pages on the Perspective system.

Symptom	Check or Perform
No modes annunciated on PFD	• Clock, sync and data lines between GIA2 and 55x computer.* • Configuration**ClockSyncData
Autopilot won't capture selected altitude	• RS 485 connection between GIA2 and 55x computer. * • Configuration**RS485
Autopilot won't follow CDI or VDI deflections	• Check analog deviation and flag outputs between GIA2 and 55x computer* • Configuration**AnalogOutputs
Autopilot won't follow GPS track in GPSS mode	• Check ARINC 429 GPS steering input to 55x from GIA2 computer* • Configuration**GPSSteering
No FD bars shown on PFD	• Check FD logic output from 55x computer to GIA2* • Configuration**FDLogic
No FD bar movement	• Check pitch and/or roll analog steering outputs from 55x computer to GIA2* • Configuration**FDInputs
Autopilot won't track HDG bug in HDG mode	• Check heading datum output from GIA2 to 55x computer* • Configuration**AnalogOutputs
Autopilot won't track CRS input	• Check course datum output from GIA2 to 55x computer* • Configuration**AnalogOutputs
Autopilot performance issues	• Refer to S-TEC troubleshooting material • If problem is suspected to be caused by a GIA output, swap GIA1 and 2 and perform a SET/ACTV for both. If problem is resolved, replaced defective GIA

- Swap GIAs and perform a SET/ACTV to confirm any suspected GIA fault
- ** Correct configuration errors by obtaining the correct loader card for the installation and reloading the S-TEC 55x configuration

“RDY” annunciation on PFD during AHRS alignment:

Normal display prior to AP or FD engagement:

Autopilot engaged in HDG mode only:

Autopilot driven failure annunciation:

Autopilot engaged in heading and altitude hold modes:

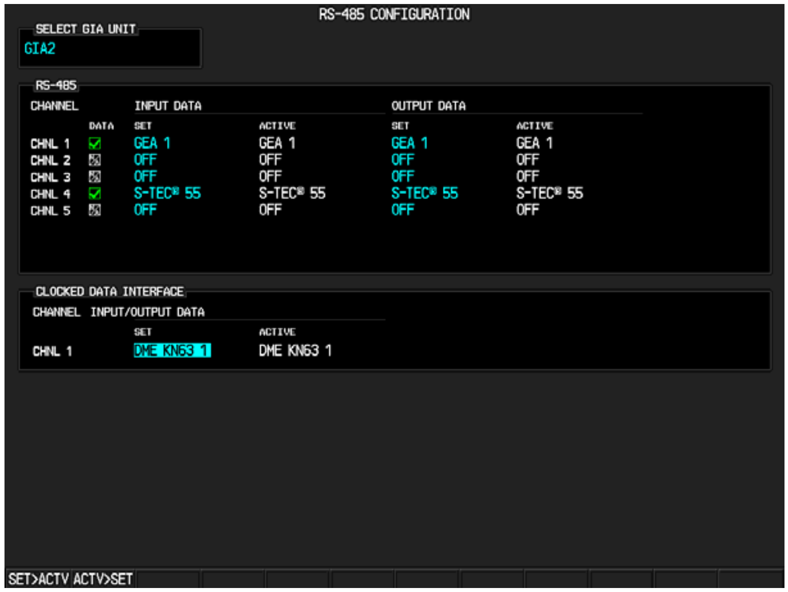
Autopilot engaged in heading and vertical speed modes. Note vertical speed selection from controller is displayed above VSI:

Autopilot engaged in heading, vertical speed and altitude hold armed to capture at 1500 ft:

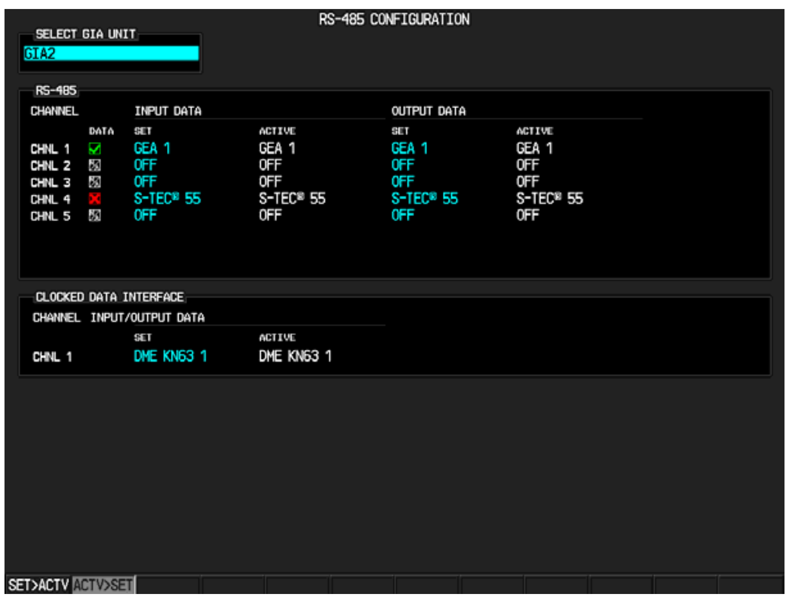
Autopilot engaged in altitude hold and nav modes, tracking a GPS course:

Autopilot has been disengaged but the flight director output from the S-TEC computer can still be selected via the instrument panel EATON switch:

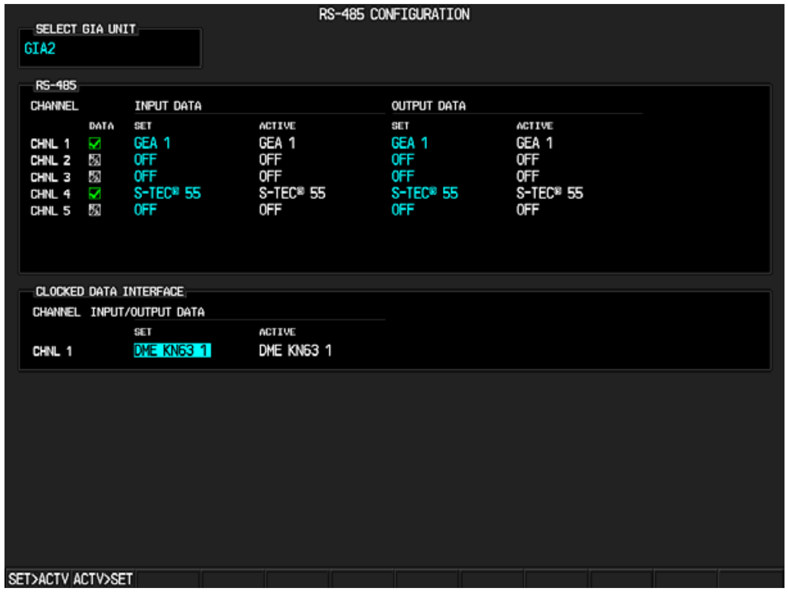
Valid RS 485 path used for altitude select data:



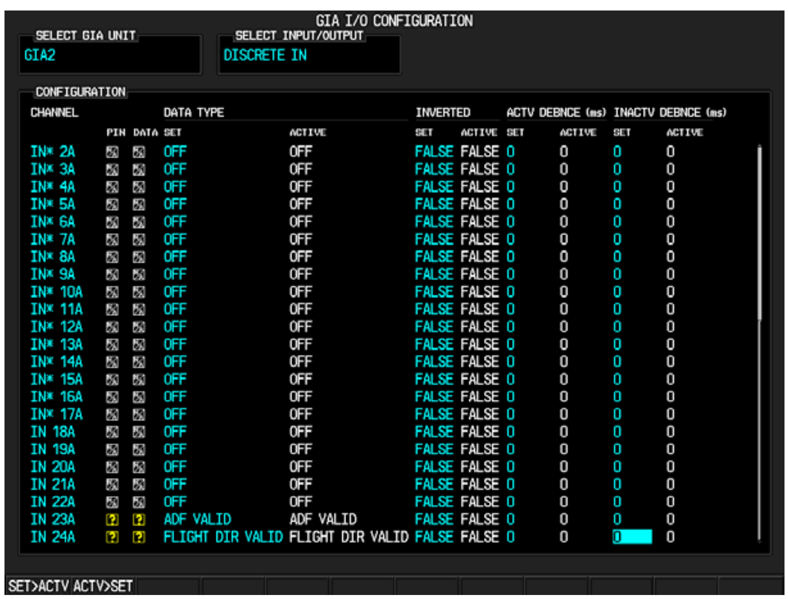
RS-485 path status indicator showing missing data from the 55x computer. Note: this page may take >10 seconds to update:



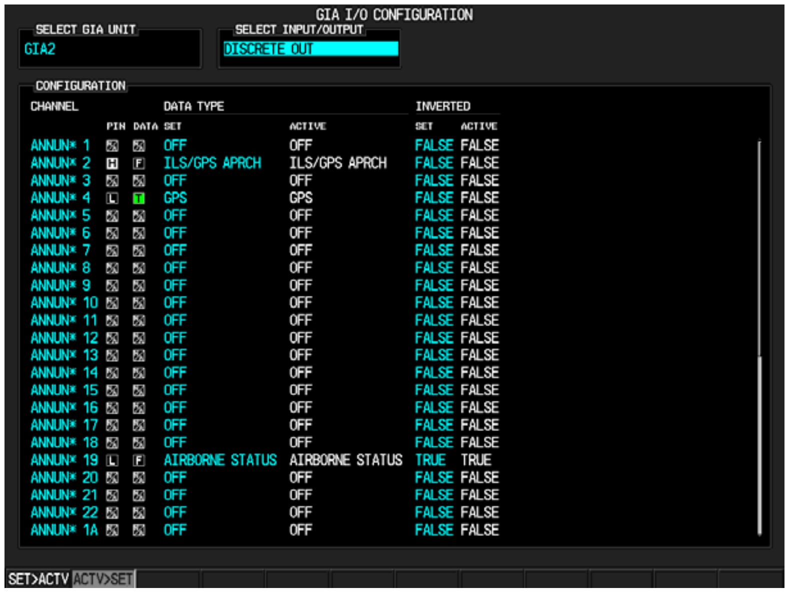
Clock, sync and data configuration set to "DME KN63 1". Used for mode annunciation data from the 55x computer:



Status unknown indication for the FD Valid is normal in configuration mode, so it isn't useful from a troubleshooting standpoint:



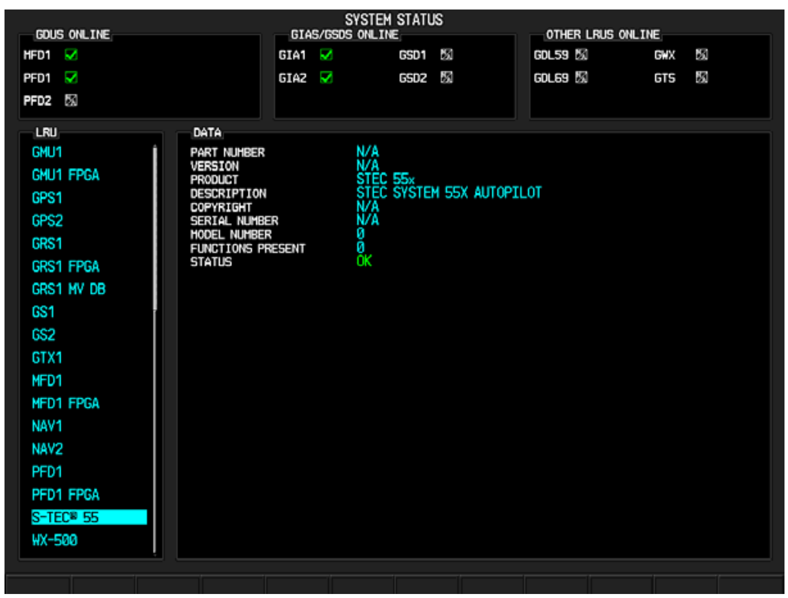
ANNUN*2 ILS/GPS APPCH output will toggle to "L" and "T" when in Localizer or Approach mode. Case shown above is in VOR or Enroute mode. ANNUN*4 GPS output is shown "L" and "T", which enables the S-TEC 55x ARINC 429 GPS steering:



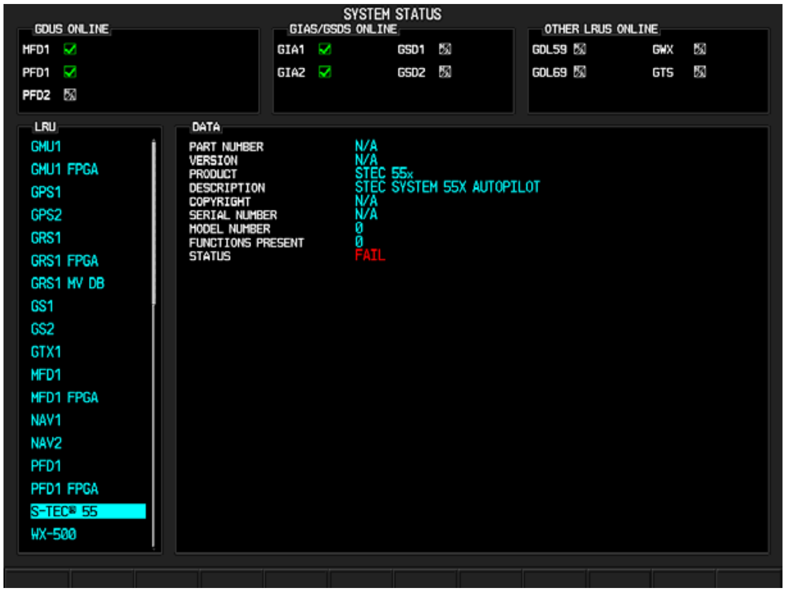
Shows the FD pitch and roll analog inputs turned on in GIA2. These signals come from the 55x computer. There is no signal monitoring capability from a configuration page:

Shows the analog outputs from GIA2 to the 55x that are required to be turned on:

Normal data shown for the 55x computer:



Failed 55x computer condition shown:



5.18 BACKSHELL CONNECTORS

The following figures show the backshell connectors (viewed with the LRU removed).

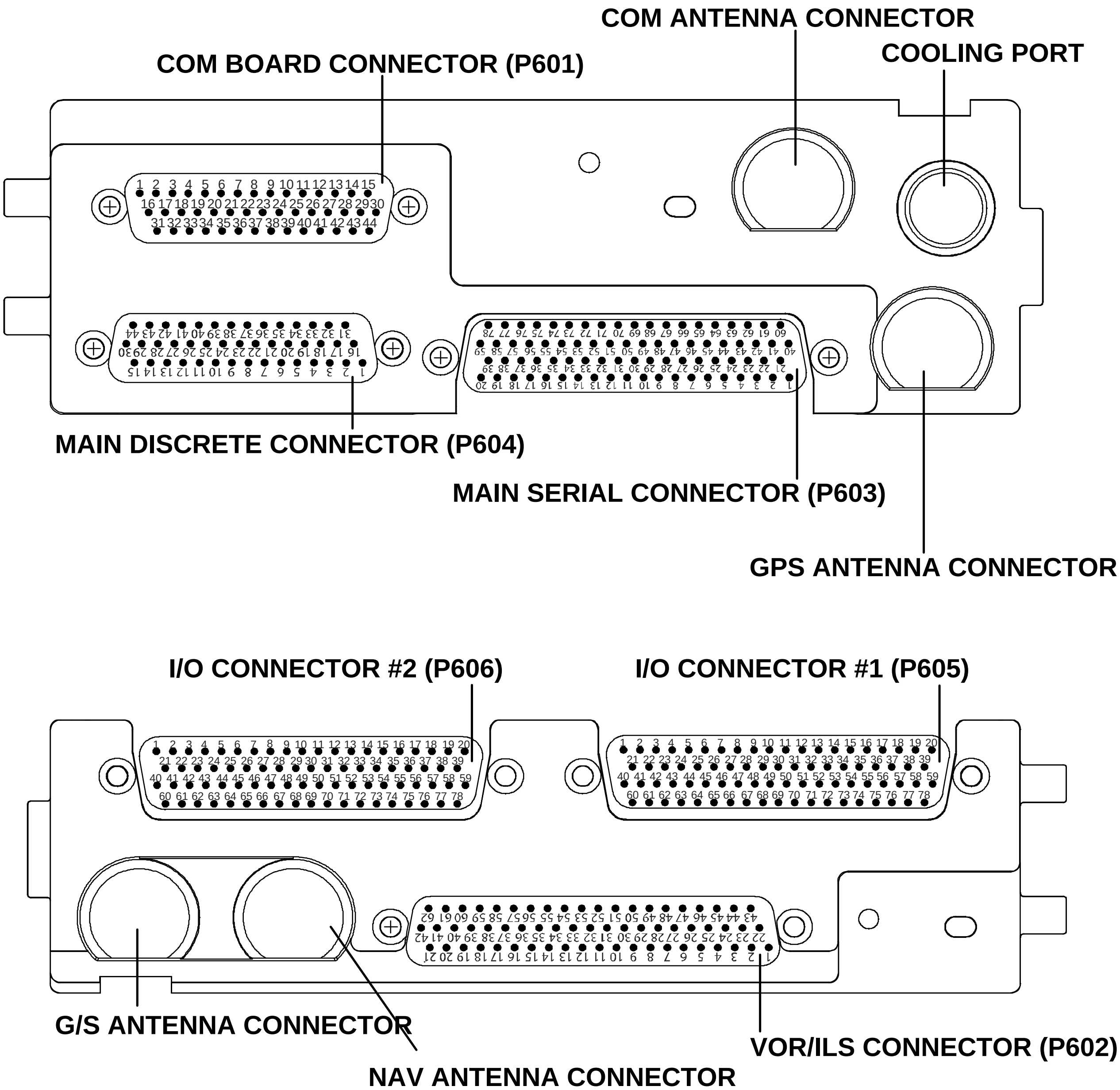


Figure 5-26. GIA 63W Backshell Connectors

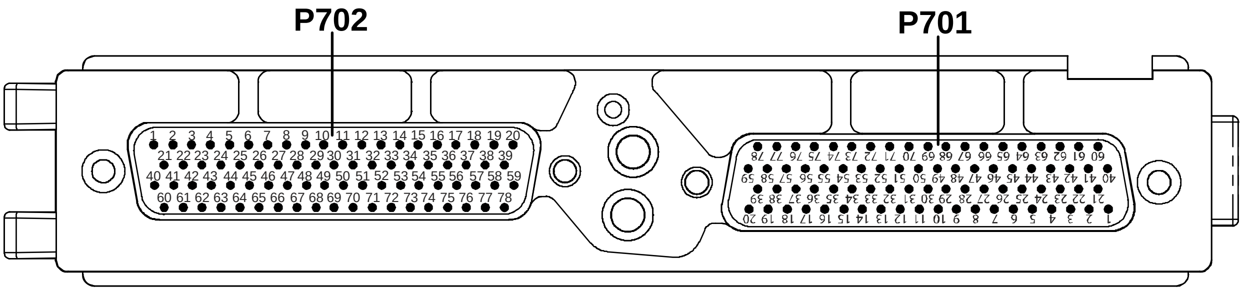


Figure 5-27. GEA 71 Backshell Connectors

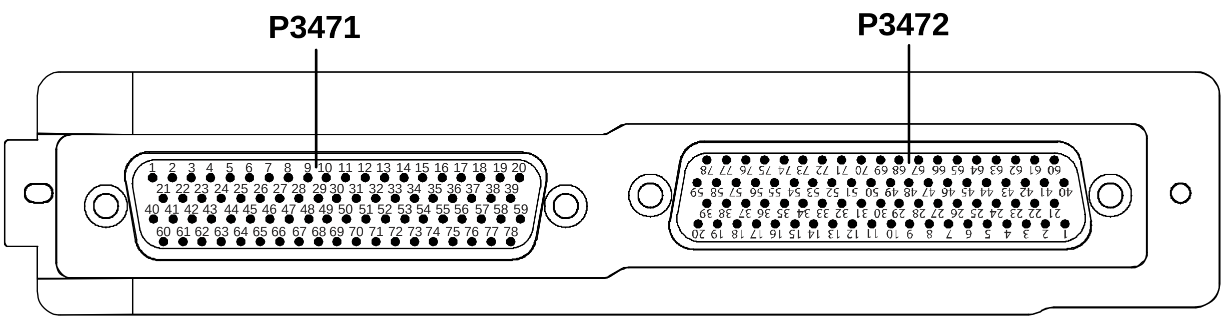


Figure 5-28. GMA 347 Backshell Connectors

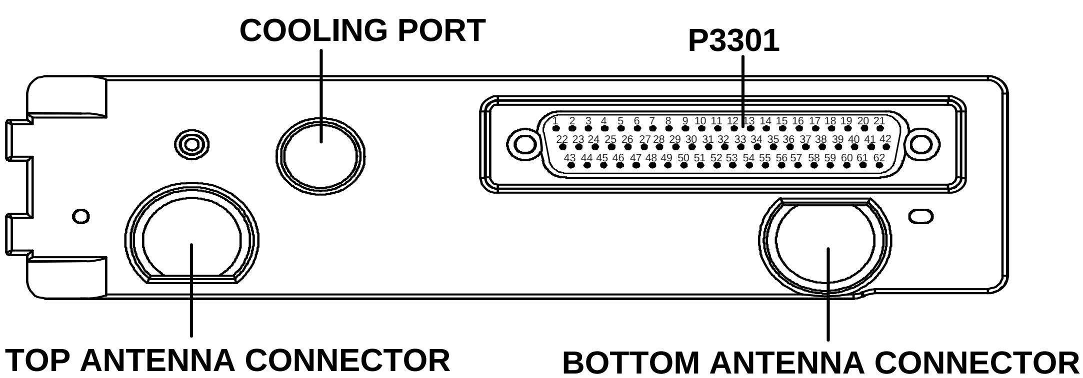


Figure 5-29. GTX 33 Backshell Connectors

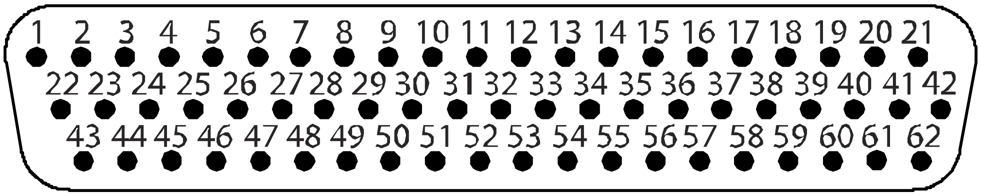


Figure 5-30. GDU 1240A Backshell Connector (P10001)

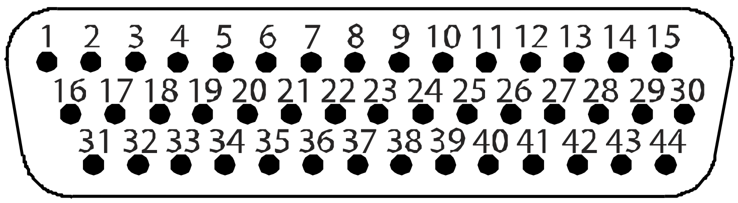


Figure 5-31. GRS 77 Backshell Connector (P771)

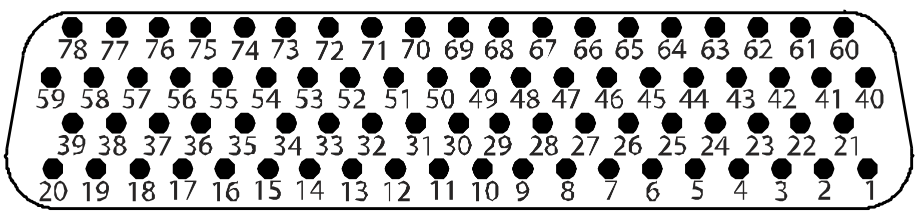


Figure 5-32. GDC 74A Backshell Connector (P741)

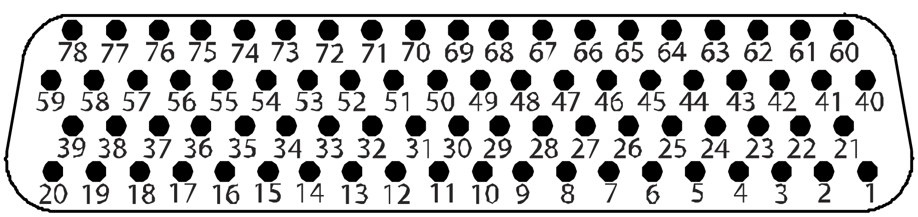


Figure 5-33. GDL 69A Backshell Connector (P691)

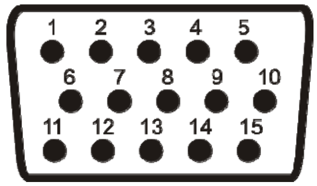


Figure 5-34. GMC 705 Backshell Connector (P7101)

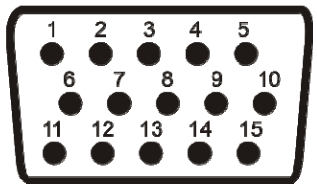


Figure 5-35. GCU 478 Backshell Connector (P4751)

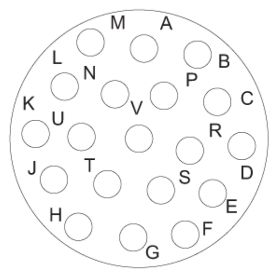


Figure 5-36. GSA 80/81 Backshell Connector (P801)

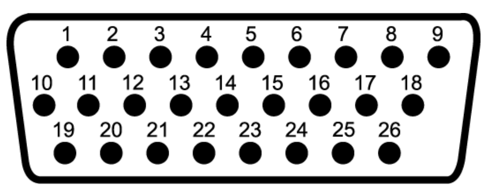


Figure 5-37. GTA 82 Backshell Connector (P821)

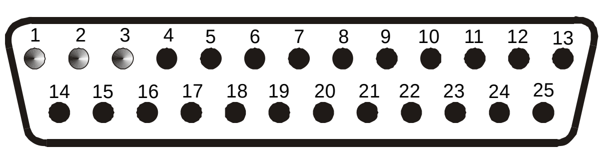


Figure 5-38. GTX 32 Backshell Connector (P3271)

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SECTION 6

LRU REPLACEMENT PROCEDURES

NOTE

LRUs must be configured and tested after removal and replacement. Refer to Section 7.

This section contains replacement procedures for a defective LRU. Replacement of an LRU is on condition of failure.

6.1 ACCESSING LRUs

Refer to the installation and outline drawings in each LRU installation manual for detailed installation/removal information.

Before removing any LRU, verify the LRU software part number and version against the software configuration listed in the Required Equipment List.

To check an LRU software part number and/or version:

1. Start the system in configuration mode.
2. The System Status Page (Figure 6-1) shows a list of LRUs in the LRU window. Activate the cursor and use the FMS knob to scroll through the list in the window and select the displayed LRUs.
3. The software part number and version is displayed in the DATA window. Compare this to the software configuration in the Required Equipment List.
4. If a faulty LRU is not reporting its software version and part number, check aircraft maintenance logs for the last software version that was loaded and verify against the the Required Equipment List. The Software Manifest Page can also be used to check part numbers and versions.

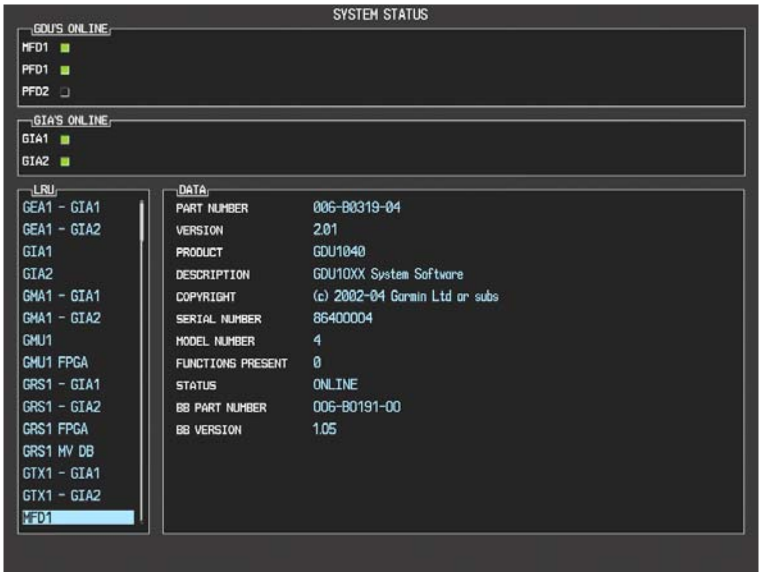

Figure 6-1. System Status Page (Configuration Mode)

6.2 GDUs

To remove:

1. Use a 3/32” hex drive tool and turn each of the four locking sockets ¼ turn counterclockwise until they reach their stops.
2. Disconnect Backshell assembly from unit.
3. Remove and save the terrain SD Card. Remove the Cirrus data card located in the top slot of the MFD.

To install:

1. Inspect connector(s) for damaged pins.
2. Connect Backshell assembly to unit.
3. Hold unit flush with the instrument panel, making sure the locking stud alignment marks are in the vertical position.
4. Use a 3/32” hex drive tool to turn each of the four locking sockets ¼ turn clockwise (this may require applying a small amount of forward pressure to engage the ¼ turn sockets).

6.3 GMA 347

To remove:

Insert a 3/32” hex drive tool into the access hole on the unit face and rotate counterclockwise until the unit can be freely pulled from the rack.

To install:

1. Inspect connector(s) for damaged pins.
2. Insert a 3/32” hex drive tool into the access hole and rotate the mechanism 90° counterclockwise to insure correct position prior to placing the unit in the rack.
3. Gently push unit into the rack to engage the connectors.
4. Insert a 3/32” hex drive tool into the access hole and rotate the mechanism clockwise until the unit is firmly seated in the rack, avoiding excessive tightening.

6.4 GIA 63W

To remove:

1. Loosen the Phillips screw to unlock unit handle.
2. Pull the GIA lever up towards the top of the unit. This disengages the locking stud with the dogleg slot.

To install:

1. Inspect connector(s) for damaged pins.
2. Gently push unit into the rack to engage the connectors.
3. Push the GIA lever down towards the bottom of the unit, avoiding the use of excessive force.
4. Lock the handle into the GIA body and tighten the Phillips screw.

6.5 GRS 77

To remove:

1. Disconnect Backshell connector from unit.
2. Loosen four screws holding the unit to the mounting rack (do not loosen mounting rack bolts).

To install:

1. Inspect connector(s) for damaged pins.
2. Fasten unit to mounting rack.
3. Connect Backshell assembly to unit.

6.6 GMU 44

To remove:

1. Loosen three screws connecting the unit to the aircraft mounting plate.
2. Disconnect cable.

To install:

1. Inspect connector for damaged pins.
2. Connect cable and properly secure connector in a stationary fashion.
3. Fasten unit to the aircraft mounting rack.

6.7 GDC 74A

To remove:

1. Loosen two thumb screws that secure the unit to the mounting rack.
2. Disconnect Backshell assembly and pitot-static plumbing from unit.
3. Remove all Teflon tape or sealing compound. Take care not to allow Teflon tape or sealing compound to fall inside unit.

To install:

1. Inspect connector(s) and pitot-static plumbing for damage.
2. Install Teflon tape or sealing compound to pitot-static plumbing.
3. Connect Backshell assembly and pitot-static plumbing to the unit.
4. Tighten two thumbscrews that secure the unit to the mounting rack.

6.8 GEA 71

To remove:

1. Loosen the Phillips screw to unlock unit handle.
2. Pull the GEA lever up towards the top of the unit. This disengages the locking stud with the dogleg slot.

To install:

1. Inspect connector(s) for damaged pins.
2. Gently push unit into the rack to engage the connectors.
3. Push the GEA 71 lever down towards the bottom of the unit, avoiding the use of excessive force.
4. If lever fails to go down, adjust backplate while engaging unit.
5. Lock the handle into the GEA 71 body and tighten the Phillips screw.

6.9 GTX 32/33

To remove:

1. Loosen the Phillips screw to unlock unit handle.
2. Pull the GTX 33(X) lever up towards the top of the unit. This disengages the locking stud with the dogleg slot.

To install:

1. Inspect connector(s) for damaged pins.
2. Gently push unit into the rack to engage the connectors.
3. Push the GTX 33(X) lever down towards the bottom of the unit, avoiding the use of excessive force.
4. If lever fails to go down, adjust backplate while engaging unit.
5. Lock the handle into the GTX 33(X) body and tighten the Phillips screw.

6.10 GDL 69A

To remove:

1. Loosen the Phillips screw to unlock unit handle.
2. Pull the GDL lever up towards the top of the unit. This disengages the locking stud with the dogleg slot.

To install:

1. Inspect connector(s) for damaged pins.
2. Gently push unit into the rack to engage the connectors.
3. Push the GDL lever down towards the bottom of the unit, avoiding the use of excessive force.
4. If lever fails to go down, adjust backplate while engaging unit.
5. Lock the handle into the GDL body and tighten the Phillips screw.

6.11 GSA 80/81 SERVO ACTUATOR

The GSA 80/81 Servo Actuator, when mated with the GSM 85(A) Servo Gearbox, drives a single flight-control axis of the airplane, or its associated trim. Once installed into the aircraft, the GSA 8X servo actuator may be easily removed for maintenance, without removing or de-rigging the GSM 85(A) servo gearbox. Note that while the GSA 8X is removed, it is recommended to use the Servo Gearbox Protective Cover (P/N 145-00807-00) to cover the opening of the GSM 85(A). The protective cover is included with the GSM 85(A) unit, and is designed to prevent foreign objects from falling into the GSM 85(A).

To remove:

1. Gain access to the desired servo(s).
2. Disconnect the servo harness connector.
3. Use a socket or open-wrench to loosen and remove the servo attachment bolts. Remove the Pitch-Trim servo bracket to access all the Pitch-Trim servo attachment bolts.
4. Carefully remove the servo and place a protective cover on the output gear.
5. Place a protective cover over the GSM 85A servo mount.

WARNING

The servo motor and servo mount must fit flush together with no gaps before tightening the mounting bolts. Do not under any circumstances try to close the gap by tightening the mounting bolts or damage will occur to the servo mount requiring replacement.

To install:

1. Inspect the output gear for abnormal wear or the absence of grease. If grease is required, refer to Section 9 and grease the gear.
2. Carefully place the servo into the servo mount, ensuring proper orientation and alignment.
3. Fasten the servo to the servo mount using the existing hardware.
4. Inspect the harness connectors and check that no pins are bent or otherwise damaged. Connect the harness and secure it appropriately.

6.12 GTA 82 PITCH TRIM ADAPTER

To remove:

1. Remove four screws securing the GTA 82 adapter to the panel. Refer to aircraft installation drawings for the exact location of the Trim Adapter.
2. Disconnect servo connector.
3. Remove unit.

To install:

1. Set unit in place.
2. Install four screws. Do not over-tighten.
3. Connect servo connector.
4. Load software, load certification gains, and test the GTA 82.

6.13 GCU 478 KEYPAD

To remove:

1. Remove the setscrew securing the keypad with a 3/32nd hex tool and carefully remove keypad.
2. While supporting the keypad disconnect the connector.
3. Remove the unit.

To install:

1. Connect the connector to the back of keypad.
2. Gently place keypad into position.
3. Secure with setscrew using a 3/32nd hex tool. Do not over-tighten.
4. Load software, configure and test

6.14 CONFIGURATION MODULE

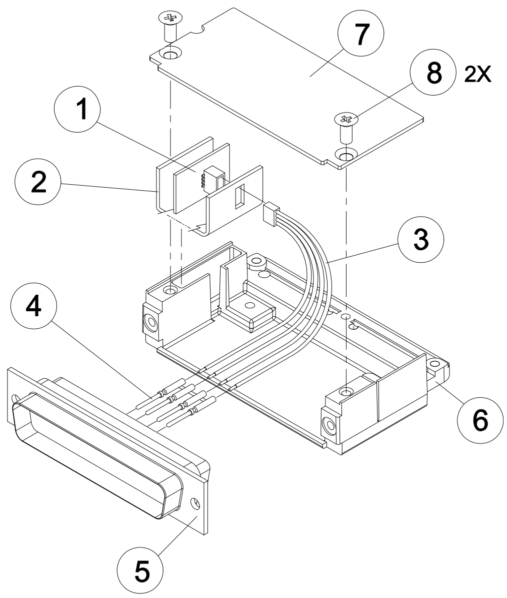

Figure 6-2. Configuration Module

To remove:

1. Remove two screws (item 8) from cover (item 7) and remove cover.
2. Unplug connector from configuration module (item 1).
3. Remove configuration module.

To install:

1. Inspect connector for damaged pins.
2. Place configuration module (item 1) in position.
3. Insert connector into configuration module (item 1).
4. If the GRS configuration module is replaced, proceed to Section 6.6.
5. If the GDC configuration module is replaced, proceed to Section 6.5.
6. If master configuration module is replaced:
7. Turn the PFD on in configuration mode (press and hold the ENT key while powering the unit).
8. Go to the Configuration Upload Page in the System Page Group.
9. Press the UPDT CFG softkey.
10. If the PFD and master configuration module is replaced, proceed to Section 9.

NOTE

If the master configuration module is replaced, the system ID number will change. The Terrain, TAWS Unlock, Chartview/Jeppview/FlightCharts, and other SD cards may need to be replaced since they will be locked to the old system ID number. Contact Garmin for assistance in determining which cards will need to be replaced.

6.15 GEA BACKSHELL THERMOCOUPLE

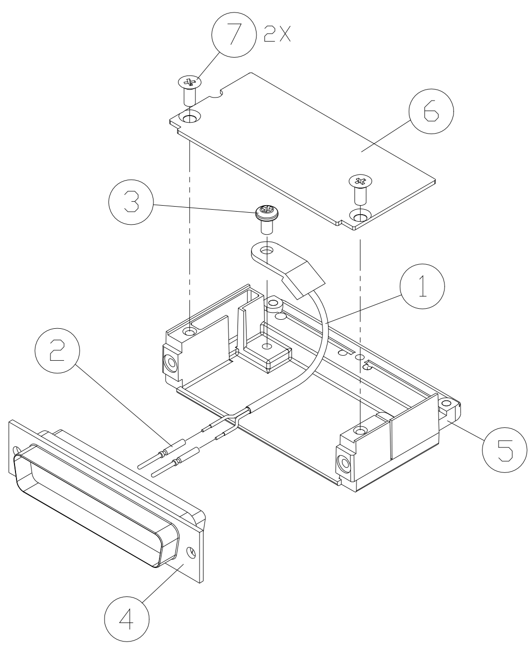

Figure 6-3. GEA Backshell Thermocouple

Item #	Description	Qty. Needed	Garmin Part Number
1	3" Thermocouple, K type	1	925-L0000-00
2	Pins #22 AWG	2	336-00021-00
3	Screw	1	211-60234-08

To remove:

1. Remove the GEA.
2. Remove the GEA connector backplate.
3. Remove connector J701, item 5, from the backplate.
4. Remove cover, item 6, from the backplate.
5. Unscrew thermocouple from boss on Backshell. Extract the thermocouple pins from the connector.

To install:

1. Crimp pins, item 2, onto each of the thermocouples wires, item 1. Ensure that pre-stripped wire length is 1/8" prior to crimping.
2. Insert newly crimped pins and wires into the appropriate connector housing location, item 6.
3. Place thermocouple body, item 1, onto the Backshell boss, item 5. Place the thermocouple as shown, so the wires exit towards the bottom of the Backshell.
4. Fasten thermocouple tightly to Backshell using the provided screw, item 6.
5. Fasten cover, item 6, to Backshell using the provided screw, item 7.

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SECTION 7

LRU SOFTWARE INSTALLATION AND TESTING

This section describes how to upload software and configuration files to a replacement LRU. Section 10 explains how to completely reinstall system software anytime after the original upload (which took place at the time of installation; refer to the installation manual for detailed information).

Perform the following steps before starting a software upload:

- Remove supplemental database cards from the lower slot of all displays before loading software into any unit. Not removing the cards may corrupt them. Replacing corrupted database cards are not covered under warranty. Approved software versions and part numbers can be found in Cirrus documentation.
- Garmin recommends the use of SanDisk brand SD cards to load system software and configuration files. If another brand of card is used, and software loading problems occur, replace the card with a SanDisk brand card and reattempt the software load.
- Connect a ground power unit to the aircraft for software loading. Do not rely on only the aircraft batteries to prevent loss of power during the software loading process. Do not allow power to be removed from the system when loading software. Remove power only when told to do so by the procedure. Generally, all displays should be on and in configuration mode, unless instructed differently.

NOTE

Pressing the ENT key will check and uncheck the highlighted software or configuration box and allow selective loading of files on the PFD SYSTEM UPLOAD configuration page where the LRU software and configuration files are loaded.

7.1 GDU 1240A

Original Display Reinstalled

If the removed display(s) are reinstalled in their original positions, no software or configuration loading is required. This does not include units that were returned for repair, since their software and configuration files were deleted during the repair testing process.

Original Displays Installed in Opposite Locations for Troubleshooting

If the PFD and MFD are installed in opposite locations, no software or configuration loading is required. Some button/knob functions may not work correctly until the displays are reinstalled in their original location. Return the displays to their original location after troubleshooting.

New, Repaired, or Exchange Display(s) Installed

Load software and configuration files from the Cirrus Perspective™ software loader card if a new, repaired, or exchange GDU is installed. See Section 10 for aviation database update instructions. Retain the Supplemental Database and other SD cards from the original display to reinstall in the new display after loading software.

7.1.1 GDU Software Loading

1. Remove the supplemental database card from the bottom slot of each GDU and the Cirrus data card from the top slot of the MFD.
2. Insert the Cirrus airframe specific System Software Loader Card into top slot of the new GDU.
3. Power on the display in Configuration mode.
4. Press the YES softkey at “DO YOU WANT TO UPDATE SYSTEM FILES?” prompt.
5. Press any key to confirm update completion after the software has finished loading.
6. Press the YES softkey at the “DO YOU WANT TO UPDATE SPLASHSCREEN” prompt.
7. Press any key to confirm update completion after the splashscreen has finished loading.
8. Power off the display. If a PFD was installed in the MFD position to load software per the NOTE above, remove the display and install in the PFD position then reinstall the original MFD.
9. Proceed to Section 7.1.2 to install the configuration files for the new display.

7.1.2 GDU Configuration Loading

1. Insert the Cirrus Perspective™ software loader card into top slot of the PFD.
2. Apply system power, insuring both MFD and PFD are in Configuration Mode.
3. On the PFD, press the NO softkey at “DO YOU WANT TO UPDATE SYSTEM FILES?” prompt.
4. After the SYSTEM STATUS page appears on the PFD, use the small FMS knob to turn to the SYSTEM UPLOAD page.

5. Activate the cursor, turn the small FMS knob to show the list of Airframe choices, highlight your airframe model in the pop-up box and press the ENT key.
6. In the FILE box, turn the small FMS knob to show the list of File choices, highlight the appropriate airframe configuration file in the pop-up box and press the ENT key. Load the following configuration files:
   - For a PFD replacement:
     i. Press the CLR ALL softkey at the bottom of the display.
     ii. Use the FMS knob and ENT key to select the AIRFRAME, SYSTEM, MANIFEST and PFD Configuration box.
     iii. Press the LOAD softkey.
     iv. When the upload is complete, press the ENT key to select OK in the Upload Complete window.
   - For a MFD replacement:
     i. Press the CLR ALL softkey at the bottom of the display.
     ii. Use the FMS knob and ENT key to select the MFD Configuration box.
     iii. Press the LOAD softkey.
     iv. When the upload is complete, press the ENT key to select OK in the Upload Complete window.

NOTE

Pressing the ENT key will check and uncheck the highlighted software and configuration boxes.

7. Once the files are selected press the LOAD softkey.
8. When the upload is complete, press the ENT key to select OK in the Upload Complete window.
9. Move the curser to the AIRFRAME window, turn the small FMS knob to show the list of Airframe choices, highlight “Options” in the pop-up box and press the ENT key.
10. In the FILE box, turn the small FMS knob to show the list of File choices, you will need to load any of the following Files if the aircraft is equipped with the following optional equipment:
    - For a PFD replacement:
      i. CO Guardian Installation Option
      ii. Avidyne TAS 6XX Installation Option
      iii. Disable GDU Fan Monitoring
      iv. EVS Installation Option
      v. FIKI IPS Installation Option

vi. GDL 69/69A Installation Option

vii. GFC 700 (without YD) Installation Option

viii. GFC 700 (with YD) Installation Option

ix. GTX 32 Installation Option

x. GTX 33 Installation Option

xi. GTX 33 Installation Option

xii. KN63 DME Installation Option

xiii. KN87 ADF Installation Option

xiv. No-Hazard IPS Installation Option

xv. SR22/TN DIN IEC 751 Oil Temp Sensor Configuration

xvi. SR22/TN MS28043 Oil Temp Sensor Configuration

xvii. Oxygen Installation Option

xviii. Skywatch 497 Installation Option

xix. S-TEC 55X/55SR Installation Option

xx. WX-500 Stormscope Installation Option

- For a MFD replacement:

  i. GFC700 w/YD - MFD Configuration file

  ii. GFC700 w/o YD - MFD Configuration file

11. Move the curser to the AIRFRAME window, turn the small FMS knob to show the list of Airframe choices, highlight “AHRS ADC Options” in the pop-up box and press the ENT key.

12. In the FILE box, turn the small FMS knob to show the list of File choices, you will need to highlight the File that matches the number of AHRS and ADC units installed on the aircraft and press the ENT key.

- For a PFD replacement:

  i. Press the CLR ALL softkey at the bottom of the display.

  ii. Use the FMS knob and ENT key to select the PFD Configuration box.

  iii. Press the LOAD softkey.

  iv. When the upload is complete, press the ENT key to select OK in the Upload Complete window.

- For a MFD replacement:

  i. Press the CLR ALL softkey at the bottom of the display.

  ii. Use the FMS knob and ENT key to select the MFD Configuration box.

  iii. Press the LOAD softkey.

iv. When the upload is complete, press the ENT key to select OK in the Upload Complete window.

13. Turn off the system.
14. For a PFD replacement, or whenever the AIRFRAME file is loaded from the main aircraft configuration file, you must unlock additional features such as SVT, Jeppesen ChartView and TAWS by using the unlock cards that should be with the aircraft. Follow these instructions for unlocking these optional features –
    - Insert the unlock card in the top slot of the PFD.
    - Turn on the system in Config mode.
    - After the SYSTEM STATUS page appears on the PFD, use the small FMS knob to turn to the SYSTEM UPLOAD page.
    - Activate the cursor, turn the small FMS knob to show the list of Airframe choices, highlight 'Configuration Files' in the pop-up box and press the ENT key.
    - In the FILE box, turn the small FMS knob to show the list of File choices, highlight 'Enable X (SVS, TAWS, or Chartview)' in the pop-up box and press the ENT key.
    - Press the LOAD softkey.
    - When the upload is complete, press the ENT key to select OK in the Upload Complete window.
    - Turn off the system.
    - Repeat for additional unlock cards.
15. Turn off the system.
16. Restart the system in normal mode and allow to initialize. This sets the System ID and is needed before inserting the Supplemental Database cards.
17. Turn off the system.
18. Insert an aviation database update SD card into the top slot of the replaced display.
19. Apply power to the display. The following prompt is displayed in the upper left corner:

```
DO YOU WANT TO UPDATE THE AVIATION DATABASE?
PRESS CLR FOR NO AND ENT FOR YES
YOU HAVE 30 SECONDS BEFORE NO IS RETURNED
```

20. Press the ENT key to confirm the database update. The following prompt is displayed:

```
DO YOU WANT TO UPDATE THE AVIATION DATABASE?
PRESS CLR FOR NO AND ENT FOR YES
YOU HAVE 30 SECONDS BEFORE NO IS RETURNED
UPDATING AVIATION DATABASE
.
UPDATED 1 FILES SUCCESSFULLY!
```

21. After the update completes, the display starts in normal mode. Turn off the display and remove the aviation database update SD Card.

22. Reinsert the Supplemental Database Cards in the bottom slot of each display. Be sure to insert the card removed from the MFD back into the MFD.

7.1.3 GDU Testing

If the display is removed or replaced, the following checks are recommended. Start PFD and MFD in normal mode. Press the ENT key to acknowledge the agreement on the MFD. Allow the displays to initialize for approximately one minute. The GRS 77 and GDC 74A require longer initialization periods than do the other LRUs. During startup, this causes the attitude, airspeed, and altitude fields to be invalid during the first ~40-60 seconds of PFD power-up.

Check the PFD and MFD displays for the following:

1. Check in the top corners of the PFD and MFD to see that all COM/NAV display fields are valid.
2. Check to see that altitude, airspeed, vertical speed and OAT fields are valid on the PFD.
3. Check to see that attitude and heading are valid (unless an AHRS calibration is required).
4. Check to see that the engine instrument fields are valid on the MFD.
5. Push the red display reversion button on the instrument panel. Make sure both displays enter reversionary mode (both should have valid altitude, airspeed, vertical speed, and engine instruments).
6. De-activate reversionary mode by pushing the red reversion button.

NOTE

Make sure the Jeppesen aviation database is present and that optional equipment and features such as SVT, Jeppesen ChartView, and TAWS are operational.

7.2 GMA 347

Original GMA 347 Reinstalled

No software or configuration loading is required if the original GMA 347 is reinstalled. This does not include units that were returned for repair since their software and configuration files were deleted during the repair testing process.

New, Repaired, or Exchange GMA 347 Installed

Load software and configuration files from the Cirrus Perspective™ software loader card if a new, repaired, or exchange GMA 347 is installed.

7.2.1 GMA Software and Configuration Loading

1. Insert the Cirrus Perspective™ software loader card into the top slot of the PFD.
2. Apply system power. Make sure the MFD and PFD are in Configuration Mode. Press the NO softkey at the "DO YOU WANT TO UPDATE SYSTEM FILES?" prompt on the PFD.
3. After the SYSTEM STATUS page appears on the PFD, use the small FMS knob to turn to the SYSTEM UPLOAD page.
4. Activate the cursor, turn the small FMS knob to show the list of airframe choices, highlight the airframe model in the pop-up box, and press the ENT key.
5. In the FILE box, turn the small FMS knob to show the list of file choices, highlight the appropriate airframe configuration file in the pop-up box, and press the ENT key.
6. Press the CLR ALL softkey.
7. Using the FMS knob and ENT key select the following files:
   - GMA software
   - GMA configuration

   NOTE

   Pressing the ENT key will check and uncheck the highlighted software and configuration boxes.
8. Once the desired files are selected, press the LOAD softkey.
9. When the upload is complete, press the ENT key to select OK in the Upload Complete window. Move the cursor to the AIRFRAME window, turn the small FMS knob to show the list of Airframe choices, highlight "Options" in the pop-up box, and press the ENT key.
10. In the FILE box, turn the small FMS knob to show the list of file choices. You will need to load any of the following files if the aircraft is equipped with the following optional equipment:
    a. KR87 ADF – GMA Configuration file
    b. KN63 DME – GMA Configuration file
11. Turn off the system.

7.2.2 GMA Testing

An in-aircraft checkout may be performed in the aircraft on the ramp with known good microphone, headset, and speaker.

7.2.2.1 Intercom System (ICS) and Music Input Check

1. Plug in headsets at each ICS position.
2. Make sure the MAN SQ key is off (no LED). If the LED is on, toggle it off by pressing and holding the pilot side volume knob until the LED turns off.
3. Adjust the volume for each position and confirm that the ICS is working properly. Rear passenger volume is controlled by pulling the co-pilot volume knob to the outer detent position.
4. Check Pilot and Copilot ICS positions for isolation and proper operation of volume and squelch controls.
5. Input Music 1 and Music 2 inputs and check for proper operation at all headphone locations.

7.2.2.2 Transceiver Operational Check

Perform a ramp test radio check by operating the installed transceivers, microphone, microphone key and audio over the headphones and speaker. Verify that communications are clear and PTT operation is correct for each pilot position.

1. Select the audio source corresponding to each installed avionics unit (i.e. NAV1, NAV2, COM1, COM2) and check for audio over the headsets.
2. Press the SPKR key and verify that the selected audio is heard over the speaker.

7.2.2.3 Failsafe Operation Check

1. Turn the GMA 347 off by pulling the AUDIO circuit breaker. This directs all COM 1 phone audio, MIC audio and MIC key to the pilot's position.
2. Check the failsafe operation by operating the COM 1 microphone, microphone key and audio over the headphones. All volume control for the COM audio should be through the PFD/GCU478 volume controls. Verify proper operation of COM 1 using the failsafe operation.
3. Close the AUDIO circuit breaker and continue testing.

7.2.2.4 Marker Beacon Test

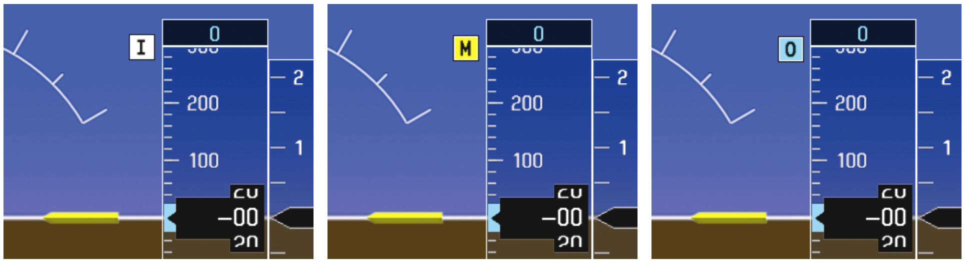


Figure 7-1. Marker Beacon Symbology

Using a ramp tester, simulate the outer marker, middle marker and inner marker signals by following the test equipment manufacturer’s instructions. Verify that each marker audio signal is present over the headphones and speaker. Verify that the outer, middle, and inner annunciations appear on the PFD when the corresponding signal is applied. Marker beacon annunciations appear at the upper left corner of the altitude indicator on the PFD (Figure 7-1). Operate the MKR MUTE key on the GMA 347 and confirm that the audio signal is muted.

7.3 GIA 63W

Original GIA 63W(s) Reinstalled

No software or configuration loading is required if the GIA that was removed is reinstalled in its original position (GIA1 and GIA2 in their original racks). This does not include units that were returned for repair since their software and configuration files were deleted during the repair testing process.

Original GIA 63W(s) Installed in Opposite Locations for Troubleshooting Purposes

No software loading is required if the original GIA units are installed in opposite locations (GIA1 and GIA2 in opposite unit racks). However, the units must be reconfigured in their new positions. Follow these instructions to reconfigure the units without using the Cirrus Perspective™ software loader card:

1. Apply system power, insuring both MFD and PFD are in Configuration Mode.
2. On the PFD, use the FMS knob to navigate to the GIA RS-232/ARNIC 429 CONFIG page.
3. In the SELECT UNIT box in the upper left corner of the screen, verify GIA1 is listed.
4. Press the SET>ACTV softkey in the lower left corner of the screen.
5. When the “Activate parameter settings?” window appears, verify OK is highlighted and press the ENT key.
6. When the “GIA #1 Configured” window shows “Complete”, press the ENT key to select OK in the window.
7. Activate the cursor, turn the small FMS knob to show the list of GIA choices, highlight GIA2 in the pop-up box and press the ENT key.
8. Press the SET>ACTV softkey in the lower left corner of the screen.
9. When the “Activate parameter settings?” window appears, verify OK is highlighted and press the ENT key.
10. When the “GIA #2 Configured” window shows “Complete”, press the ENT key to select OK in the window.
11. Turn off the system.

New, Repaired, or Exchange GIA 63W(s) Installed

Load software and configuration files from the Cirrus Perspective™ software loader card if a new, repaired, or exchanged GIA 63W is installed.

7.3.1 GIA Software and Configuration Loading

1. Insert the Cirrus Perspective™ software loader card into the top slot of the PFD.
2. Apply system power, insuring both MFD and PFD are in Configuration Mode.
3. On the PFD, press the NO softkey at "DO YOU WANT TO UPDATE SYSTEM FILES?" prompt.
4. After the SYSTEM STATUS page appears on the PFD, use the small FMS knob to turn to the SYSTEM UPLOAD page.
5. Activate the cursor, turn the small FMS knob to show the list of airframe choices, highlight your airframe model in the pop-up box and press the ENT key.
6. In the FILE box, turn the small FMS knob to show the list of file choices, highlight the appropriate airframe configuration file in the pop-up box and press the ENT key.
7. Press the CLR ALL softkey.
8. Using the FMS knob and ENT key select the following files:
9. GIA (1 or 2) – SYS Software and Configuration files
10. GIA (1 or 2) – AUDIO Software file
11. GIA (1 or 2) – GPS Software file
12. AUDIO Configuration file
13. Once the files are selected, press the LOAD softkey.
14. When the upload is complete, press the ENT key to select OK in the Upload Complete window.
15. Proceed to Section 7.3.2 to install the Optional Equipment Configuration files.

7.3.2 GIA Optional Equipment Configuration Loading

1. Insert the Cirrus Perspective™ software loader card into top slot of the PFD.
2. Apply system power, insuring both MFD and PFD are in Configuration Mode.
3. On the PFD, press the NO softkey at "DO YOU WANT TO UPDATE SYSTEM FILES?" prompt.
4. After the SYSTEM STATUS page appears on the PFD, use the small FMS knob to turn to the SYSTEM UPLOAD page.
5. Activate the cursor, turn the small FMS knob to show the list of airframe choices, highlight "Options" in the pop-up box, and press the ENT key.
6. In the FILE box, turn the small FMS knob to show the list of file choices, and load any of the following files if the aircraft is equipped with the following optional equipment:
   - For a GIA1 replacement:
     i. Oxygen – GIA 1 Configuration file
     ii. Ice Protection (NH and FIKI) – GIA 1 Configuration file
     iii. GTX 33 – GIA 1 Configuration file
     iv. GTX 32 – GIA 1 Configuration file
     v. GFC700 w/YD – GIA 1 - Gains Software and Configuration files
     vi. GFC700 w/o YD - GIA 1 - Gains Software and Configuration files
   - For a GIA2 replacement:
     i. WX-500 - GIA 2 Configuration file
     ii. Skywatch 497 – GIA 2 Configuration file
     iii. Oxygen – GIA 2 Configuration file
     iv. KR87 ADF - GIA 2 Configuration file
     v. KN63 DME - GIA 2 Configuration file
     vi. Ice Protection (NH and FIKI) - GIA 2 Configuration file
     vii. GTX 33 - GIA 2 Configuration file
     viii. GTX 32 - GIA 2 Configuration file
     ix. GFC700 w/YD – GIA 2 – Gains Software and Configuration files
     x. GFC700 w/o YD - GIA 2 – Gains Software and Configuration files
     xi. CO Guardian - GIA 2 Configuration file
     xii. Avidyne TAS 6xx - GIA 2 Configuration file

7. Move the cursor to the AIRFRAME window, turn the small FMS knob to show the list of airframe choices, highlight “AHRS ADC Options” in the pop-up box, and press the ENT key.
8. In the FILE box, turn the small FMS knob to show the list of file choices, highlight the file that matches the number of AHRS and ADC units installed on the aircraft, and press the ENT key.
   - For a GIA1 replacement:
     i. Press the CLR ALL softkey at the bottom of the display.
     ii. Use the FMS knob and ENT key to select the GIA 1 configuration box.
     iii. Press the LOAD softkey.
     iv. When the upload is complete, press the ENT key to select OK in the ‘Upload Complete’ window.
   - For a GIA2 replacement:
     i. Press the CLR ALL softkey at the bottom of the display.
     ii. Using the FMS knob and ENT key, select the GIA 2 configuration box.
     iii. Press the LOAD softkey.
     iv. When the upload is complete, press the ENT key to select OK in the ‘Upload Complete’ window.
9. Turn the system off.

7.3.3 GIA Options Interface Testing

This section describes the checks that must be completed in order to verify that the optional systems interfaced to the Perspective™ System are operating correctly. The checks must be completed only for those systems that are installed. Following the interface verification additional system checks may be required (refer to the appropriate system installation manual for additional details).

7.3.4 Optional Stormscope Functional Test

This procedure assumes familiarity with the setup and operation of the WX-PA portable analyzer kit.

NOTE

The MFD should be set at 100 NM (or next highest available range) on the 360 degree weather screen and in strike mode.

NOTE

The WX-500 will plot data at one-half the range selected on the WX-PA.

Apply power to the WX-500 and verify that no failed test messages appear. If fault messages do appear, refer to the WX-500 Installation Manual for troubleshooting. Following successful power up, verify the following modes:

- Access to both 360° and 120° weather view modes.
- All available ranges can be displayed.
- Access to the cell mode and strike mode.
- Strike counter is displayed in all weather modes and ranges.

1. Key COM1 and COM2 several times on different frequencies representing the lower, mid, and upper portion of the VHF COM frequency band. Make sure the keying of COM1 or COM2 does not cause strike data to appear on the MFD.
2. Operate the DME and XPDR. Make sure these systems do not cause strike data to appear on the MFD.
3. Connect the WX-PA cable to the WX-PA antenna.
4. Position the WX-PA antenna on the WX-500 antenna. Make sure the connection is tight. If necessary, use tape to secure the WX-PA antenna. Make sure the “FORWARD” arrows are aligned and the WX-PA antenna suction cups are positioned forward of center along the longitudinal axis.
5. Secure the WX-PA cable to the aircraft with the attached suction cup and route the cable to the cockpit.
6. Connect the remaining cable end to the WX-PA.
7. Power up the WX-PA and verify the WX-500 is in the weather mapping mode (i.e. 360° weather view at the 200 NM range).

8. Set the WX-500 to STRIKE mode, 100 NM range (or next highest available range).
9. Select the ‘Continuous Out’ mode from the WX-PA menu then press MENU/ENTER.
10. Select the bottom mount antenna configuration on the WX-PA keyboard (“A” key).
11. Select a cardinal bearing and a range of 120 NM.
12. Use the F1 and F2 keys to adjust range and F3 and F4 keys to adjust heading. Press MENU/ENTER to start the test.
13. Observe the MFD to ensure the proper positioning of the strikes, based on range and azimuth settings on the WX-PA. Change the cardinal bearings and verify correct test strikes. Verify the strikes are within 10 degrees of the selected azimuth and plot at 60 NM (½ of 120 NM).
14. Verify after 20 seconds of operation that the strike counter reads 580 ± 40.
15. After testing for all indicated ranges and bearings, press second, then MENU/ENTER to return to the main menu.
16. Select Circular Pattern mode from the WX-PA mode menu then press MENU/ENTER.
17. Select the bottom mount antenna configuration on the WX-PA keyboard (“A” key).
    Use the F1 and F2 keys to select the 120 NM range and press MENU/ENTER to start the test. Make sure the WX-500 plots discharge points at approximately 60 NM.
18. Observe the MFD to ensure the proper positioning of the test strikes. Verify the strikes are within 10 degrees of the 30 degree azimuth increment and within 12 NM of 60 NM.
19. When complete, set WX-PA for 55 NM, set the MFD for 50 NM (or the next highest available range) and repeat the test.
20. On the MFD, verify the sensor plots points just outside of 25 NM and the strikes are within 10 degrees of the 30 degree azimuth and within 5 NM of 27.5 NM.
21. Repeat the above setting on the MFD for 25 NM (or the next highest available range) and the WX-PA for 15 NM.
22. On the MFD, verify the positioning of test strikes. Make sure they are within 10 degrees of azimuth and within 2 NM of 7.5 NM.
23. Restart in configuration mode by opening the PFD and MFD circuit breakers. Press and hold the ENT keys on the PFD and MFD and close the PFD and MFD circuit breakers to restore power.
24. Select the ‘OTHER’ page group on the MFD. The STORMSCOPE page is shown by default.

7.3.5 Optional Skywatch Functional Test

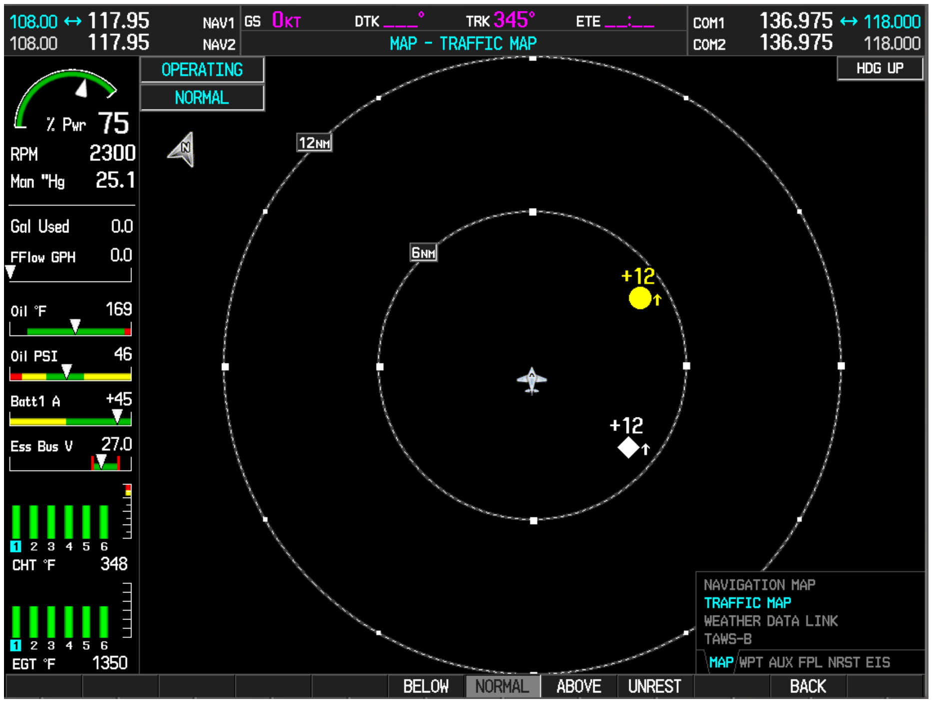


Figure 7-2. Skywatch Display

Follow the instructions in the L-3 Communications Skywatch Installation Manual for using a terminal device to calibrate and configure the system.

1. Select the TRAFFIC MAP page on the MFD.
2. Verify that the STANDBY, OPERATE, TEST (only when in Standby mode) and ALT MODE soft keys are available on the bottom of the display. Verify that a TAS mode (not TAS FAIL) is displayed in the upper left corner of the traffic map. Make sure that NO DATA is not displayed in yellow in the center of the display over the aircraft symbol.
3. Verify that the system comes up in STANDBY, indicating proper squat switch interconnect.
4. Press the OPERATE softkey and verify that OPERATING is displayed in the upper left corner of the traffic map.
5. Press the STANDBY softkey and verify that STANDBY is displayed in the upper left corner of the traffic map.
6. Press the TEST soft key and verify that TEST is displayed in the upper left corner of the traffic map and a traffic test pattern is displayed. Upon completion of the test, verify that "SKYWATCH SYSTEM TEST PASSED" is heard over the cockpit speaker.
7. Open the TRAFFIC circuit breaker on the avionics circuit breaker panel. On the MFD, make sure that NO DATA is displayed in yellow after several seconds.
8. Close the TRAFFIC circuit breaker on the avionics circuit breaker panel and verify that NO DATA is removed after several seconds.

9. Setup a traffic simulation on a ramp generator with TAS functionality.
10. Using the ramp generator, simulate a TA and verify the proper target display and associated “Traffic, Traffic” audio alert.
11. Provide a valid GPS signal and verify TAS (True Airspeed) is valid. Connect a pitot/static test set and increase the pitot pressure to >30 knots.
12. Regenerate a simulated TA and make sure the proper target is displayed with ***no*** audio alert.

7.3.6 Optional DME Function Test

This check verifies that the DME-to-Garmin interface operates correctly. This check is only required for SR20/SR22/SR22T aircraft with the Honeywell remote mounted KN63 DME installed.

Figure 7-3. DME Display

1. On the PFD, check to see if the DME window is displayed. If not, press the PFD softkey, then press the DME softkey to display the DME window (located next to the HSI).
2. Press the ADF/DME softkey. Verify that the ADF/DME TUNING screen is displayed.
3. With the ADF/DME TUNING screen displayed, use the large FMS knob and highlight the DME field. Verify that the NAV1, NAV2 and HOLD modes can be selected by turning the small FMS knob.
4. Verify that NAV1 and NAV2 frequencies are set to 108.00 and 117.00 MHz.
5. Select the DME NAV1 mode by pressing the ENT softkey. Verify that the DME window display is set to the NAV1 frequency of 108.00 MHz.
6. Select the DME NAV2 mode by pressing the ENT softkey. Verify that the DME window display is set to the NAV2 frequency of 117.00 MHz.
7. Select the DME HOLD mode by pressing the ENT softkey. Verify that the last selected NAV frequency of 117.00 MHz remains the same when the NAV2 frequency is changed.
8. On the NAV Test Set, set up a DME test and note the NAV frequency. Tune NAV 1 to the test set frequency and set the DME MODE to NAV1. Ensure that NAV 2 is set to a frequency other than the test set frequency.

9. Verify that the DME distance on the PFD matches the test set.
10. Press the DME and SPKR buttons on the audio panel to select the DME audio and turn on the speaker. Verify that the DME audio can be heard over the speaker.
11. On the PFD, set the DME mode to NAV2 and verify that the DME distance is dashed out.
12. Tune NAV 2 to the test set frequency.
13. Verify that the DME distance on the PFD matches the test set.

7.3.7 Optional ADF Function Test

This check verifies that the ADF-to-Garmin interface operates correctly. This check is only required for SR20/SR22/SR22T aircraft with KR-87 ADF installed.

Figure 7-4. ADF Display

1. On the PFD, check to see if the ADF window(s) is displayed. If not, press the PFD softkey. Using the BRG1 or BRG2 softkey, toggle until the ADF bearing is shown. Press the BACK softkey.
2. Verify that the ADF window is not invalid (no red 'X').
3. Verify that the audio from the tuned station is heard on the pilots and copilot's headset.
4. Verify that the audio from the tuned station is heard over the cabin speaker.

7.3.8 TAWS Functional Test (if unlocked)

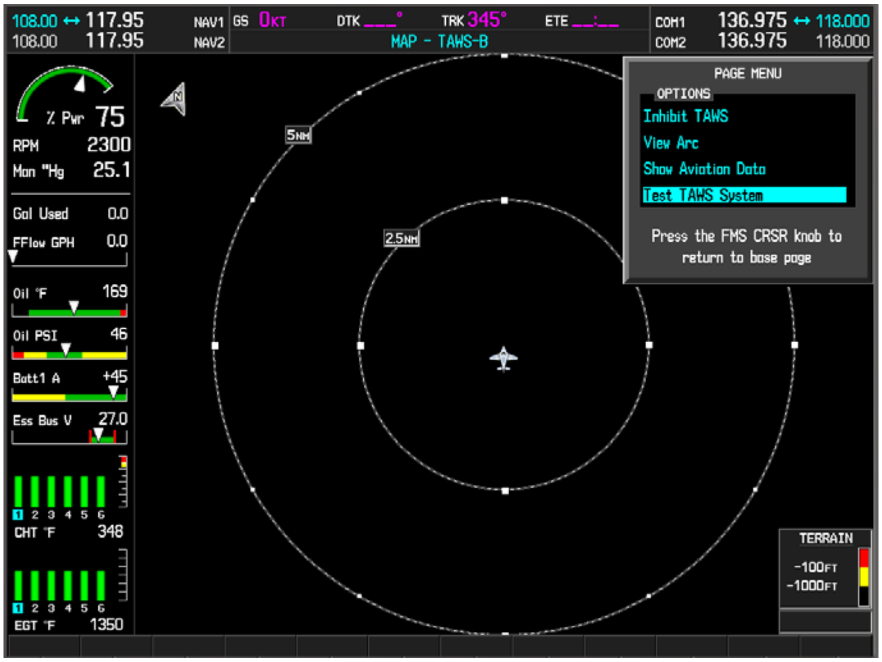


Figure 7-5. TAWS Display

1. Select the TAWS page from the MAP group on the MFD.
2. Verify that the title at the top of the page reads “MAP – TAWS-B”. If TAWS has not been enabled, the title will read “MAP – TERRAIN PROXIMITY” or “MAP – TERRAIN”.
3. Press the MENU button and select “Test TAWS” from the pop-up menu (Figure 7-5).
4. After the TAWS test is completed, verify that “TAWS System Test OK” is heard over the cockpit speaker.
5. Press the MENU button again and select “Inhibit TAWS” from the pop-up menu and press ENT. Verify “TAWS INHB “ is displayed in the lower right hand corner of the PFD.
6. Press the MENU button again and select “Enable TAWS” from the prop-up menu and press ENT. Verify the “TAWS INHB” annunciation on the PFD is removed.
7. With a GPS position acquired, shield or disconnect the GPS antennas to remove the GPS signal. Verify “DR” shows on the MFD and the “TAWS N/A” annunciation shows on both the MFD and PFD.
8. Reconnect or remove the shield from the GPS antennas, verify the MFD indications and PFD annunciation are removed and verify that “TAWS Available” is heard over the cockpit speaker after about 10 seconds from the moment a 3D GPS solution is re-acquired.

7.3.8.1 TAWS Aural Alerts Verification

Perform the following check if the system is equipped with the TAWS option.

1. Place the PFD in configuration mode by holding down the ENTER or rightmost softkey while applying power.
2. Select the Audio Alert Configuration page.
3. Press the SPKR button on the GMA 347W audio panel to activate the cockpit speaker. Make sure the SPKR button is illuminated.
4. On the Audio Alert Configuration page, use the FMS knob to activate the cursor and scroll through the MSG FIELD audio alert menu. When the desired alert is selected, press the ENT key on the display. To play the alert, highlight the 'PLAY?' option and press the ENT key. Perform this action for each of the following audio messages, verifying that each can heard both in the pilot/co-pilot headset and over the cockpit speaker:
    - Five Hundred
    - Caution Obstacle (2x)
    - Caution Terrain (2x)
    - Don't Sink
    - Obstacle Ahead (2x)
    - Obstacle Ahead, Pull-Up (2x)
    - Obstacle Ahead (x2), Pull-Up (2x)
    - Pull-Up
    - Sink Rate
    - Terrain Ahead, Pull-Up (2x)
    - Terrain Ahead (2x)
    - Too Low, Terrain
    - TAWS Not Available
    - TAWS System Failure
    - TAWS System Test OK
    - Terrain (2x); Pull-Up (2x)
    - TAWS Available

7.3.9 Garmin FliteChart® Functional Test

NOTE

This test is not required if Jeppesen ChartView is enabled. If ChartView is enabled, the Garmin FliteChart® database will not be shown on either the MFD startup screen or the AUX – System Status page as described below.

1. Select "AUX – System Status" page on the MFD, then select DBASE softkey.
2. Use the small FMS knob and scroll to CHART.
3. Verify "FliteCharts" is displayed in blue text adjacent to "CHART".
4. Verify the FliteChart® database 'REGION', 'CYCLE' number, 'EFFECTIVE', 'EXPIRES', and 'DISABLES' dates of the subscription appear in blue text.
5. Use the GCU large FMS knob to select the Navigation Map Page then press the SHW CHRT softkey.
6. Make sure 'Terminal Chart' is displayed and the softkey selection advances to the following:
    - CHRT OPT
    - CHRT
    - INFO
    - DP
    - STAR
    - APR
    - WX
    - GO BACK
7. Press the CHRT OPT softkey and verify Terminal Chart is displayed and the softkeys advance to the following:
    - ALL
    - FIT WDTH
    - FULL SCN
    - BACK

7.3.10 Jeppesen ChartView Database Location and Functional Test

ChartView must be enabled using a ChartView Unlock Card as specified in 005-xxxxx-xx and a current ChartView database obtained from Jeppesen. Reference section “ChartView Configuration” for enabling procedures.

NOTE

Do not erase the Cirrus specific startup screen and airframe_info.xml files when loading or updating the ChartView data via the Jeppesen website.

NOTE

The required ChartView databases are subscription-based and are to be procured by the aircraft owner directly from Jeppesen.

1. Apply power and select ‘AUX – System Status’ page. Make sure the ChartView database cycle number is displayed in blue text.
2. On the Navigation Map page, press the SHW CHRT softkey and verify airport chart is displayed and the following softkeys are displayed:
   - CHRT OPT
   - CHRT
   - INFO
   - DP
   - STAR
   - APR
   - WX
   - NOTAM
   - GO BACK
3. Press the CHRT OPT softkey and verify that the softkeys above advance to the following sub-level softkeys:
   - ALL
   - HEADER
   - PLAN
   - PROFILE
   - MINIMUMS
   - FIT WDTH
   - FULL SCN
   - BACK
4. Return to the Navigation Map Page.

5. Press the GCU MENU key to display the PAGE MENU. Turn the GCU large FMS knob and scroll through the OPTIONS Menu to 'Show Chart'. Press the GCU ENT key to display the chart and make sure that the airport diagram is displayed.
6. Press the GCU FMS knob to activate the cursor. Turn the GCU large FMS knob to select the Airport Identifier Box.
7. Turn the GCU small and large FMS knobs to enter the airport identifier for New Century Airport (KIXD) then press the GCU ENT key to complete the airport selection.
8. Press the APR softkey. Turn the GCU large FMS knob to select the Approach Box then turn the small FMS knob to show the approach chart selection choices.
9. Turn either GCU FMS knob to scroll through the available charts and select a chart for viewing by pressing the GCU ENT key. Make sure the appropriate ChartView chart is displayed.

7.3.11 SafeTaxi® Functional Test

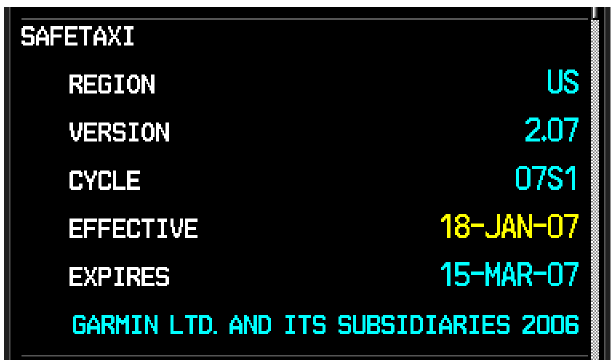


Figure 7-6. SAFETAXI® Display

The maximum map ranges for enhanced detail are configurable by the flight crew. When zoomed in close enough to show airport detail, the map reveals runways with numbers, taxiways with identifying letters/numbers and airport landmarks. The landmarks include ramps, buildings, control towers, and other prominent features. Map resolution is greater at lower ranges. When the aircraft location is within the screen boundary (including within SafeTaxi® ranges) an airplane symbol is shown on any of the navigation map views for enhanced position awareness. Any map page that displays the navigation view can also show the SafeTaxi® airport layout within the maximum configured range. The following is a list of pages where the SafeTaxi® feature can be seen:

- Navigation Map Page
- Inset Map
- Weather Datalink Page
- Airport Information Page
- Intersection Information Page
- NDB Information Page

- VOR Information Page
- User Waypoint Information Page
- Trip Planning Page
- Nearest Pages

1. Select the AUX System Status page and verify that current revision levels are displayed for the following:
    - REGION
    - VERSION
    - CYCLE
    - EFFECTIVE
    - EXPIRES
2. Select Navigation Map page.
3. Press MENU. With ‘Map Setup’ highlighted, press ENT. Turn the small GCU FMS knob to select the aviation group. Press the ENT key.
4. Turn the large FMS knob to scroll through the Aviation Group options and select ‘SAFETAXI’.
5. Turn the small FMS knob to display range distances.
6. Turn either FMS knob to select 5000 ft. as the distance for the maximum SafeTaxi® display range. Press the ENT key to complete the selection.
7. Using the range knob, select a range of 5000 ft. or less. Verify SafeTaxi® display represents the current aircraft location and the airport layout.

7.3.12 GIA Testing

The following section applies to both GIA 63W units. Any differences in testing are noted.

7.3.13 VHF COM Interference Test

This test must be conducted outside. Use of a GPS repeater inside a hangar may result in a failed test. This procedure assumes that the system is currently set to 25 kHz COM channel spacing. Perform the following steps after the signal acquisition test is complete.

1. On the MFD monitor GPS signal strength bars on the third AUX page.
2. On the PFD, ensure that the CDI is set to GPS. If it is not, press the ‘CDI’ softkey until GPS ENR is displayed.
3. Make sure the GPS ‘INTEG’ flag is out of view.
4. Select 121.150 MHz on COM1.
5. Transmit for 35 seconds while monitoring GPS1 signal strength levels.
6. During the transmit period verify that the GPS ‘INTEG’ flag does not come into view on the PFD and verify on the MFD that GPS1 does not lose 3D navigation.

7. Repeat steps 5 and 6 and re-transmit while monitoring GPS2 signal levels on the MFD.
8. Repeat steps 4 through 7 at the following frequencies:
   - 121.175 MHz
   - 121.200 MHz
   - 131.250 MHz
   - 131.275 MHz
   - 131.300 MHz
9. Repeat steps 4 through 8 for the COM2 transceiver (GIA2).
10. On the MFD, select the fourth AUX page.
11. Change the COM channel spacing from 25 kHz to 8.33 kHz in the Com Config field.
12. Go back to the third AUX page.
13. Select 121.185 MHz on the COM1 and COM2 transceivers.
14. Transmit for 35 seconds while monitoring GPS1 signal strength levels.
15. During the transmit period, verify that the GPS'DR' or 'LOI' flags do not come into view on the PFD HSI and verify on the MFD that GPS 1 does not lose 3D navigation.
16. Repeat steps 14 and 15 and re-transmit while monitoring GPS2 signal levels on the MFD.
17. Repeat steps 14 through 16 at each of the following frequencies:
   - 121.190 MHz
   - 130.285 MHz
   - 131.290 MHz
18. Repeat steps 14 through 17 for the COM2 transceiver (GIA2).
19. On the MFD select the fourth AUX page and change the COM channel spacing back to 25 kHz.

7.3.14 VOR/LOC/GS Test

Check the VOR, ILS, and Glideslope functions with ramp test equipment. Operate the equipment according to the test equipment manufacturer's instructions. Adjust the RF signals levels necessary to perform the test.

7.3.15 VOR Test

1. Simulate a VOR signal on radial 360° on the ramp tester. Tune both NAV1 and NAV2 receivers to the ramp test frequency.
2. Set the HSI on the PFD to VOR1 by pressing the CDI softkey. Set the VOR1 CDI course to 360° using the CRS knob on the GCU478.
3. On the ramp tester, apply a 10° deviation signal in both right and left directions and verify full scale deflection of the VOR1 CDI in the corresponding directions.
4. On the ramp tester, set the signal deviations to one dot, then two dots deflection in both right and left directions. Verify proper response from the VOR1 CDI.
5. Set the HSI on the PFD to VOR2 by pressing the CDI softkey. Set the VOR2 CDI course to 360° using the CRS knob on the PFD.
6. On the ramp tester, apply a 10° deviation signal in both right and left directions and verify full scale deflection of the VOR2 CDI in the corresponding directions.
7. On the ramp tester, set the signal deviations to one dot, then two dots deflection in both right and left directions. Verify proper response from the VOR2 CDI.

7.3.16 Localizer/Glideslope Test

1. Simulate a localizer signal on the ramp tester. Tune both NAV1 and NAV2 receivers to the ramp test frequency.
2. Set the HSI on the PFD to LOC1 by pressing the CDI softkey.
3. On the ramp tester set the signal deviations to one dot, then two dots deflection in both right and left directions. Verify proper response from the LOC1 CDI.
4. With LOC1 CDI selected, exercise the Glideslope deviation indicator with up and down deviation indications and verify the Glideslope deviation indicator responds correctly to the ramp test signal deviations.
5. Set the HSI on the PFD to LOC2 by pressing the CDI softkey.
6. On the ramp tester set the signal deviations to one dot, then two dots deflection in both right and left directions. Verify proper response from the LOC2 CDI.
7. With LOC2 CDI selected exercise the Glideslope deviation indicator with up and down deviation indications and verify the Glideslope deviation indicator responds correctly to the ramp test signal deviations.

7.3.17 GFC 700 VOR/LOC/GS Test

NOTE

Perform this test only if the aircraft is equipped with a GFC 700.

1. Simulate a VOR signal on a radial which corresponds with the aircraft's current heading. Tune the NAV1 and NAV2 receivers to the correct ramp test frequency.

2. Set the HSI on the PFD to VOR1 by pressing the CDI softkey. Adjust the HSI course as necessary using the CRS knob so that the CDI is centered (should correspond to current aircraft heading).
3. Engage the Autopilot in altitude hold mode and press the NAV key on the GMC 705.
4. Apply a right signal deviation on the ramp tester. Verify the VOR1 CDI indicates a right deviation and that the Flight Director and aircraft controls follow the CDI to the right.
5. Apply a left signal deviation and verify the Flight Director and aircraft controls follow the CDI to the left.
6. Press the CDI softkey to select the VOR2 receiver. Verify that the green 'NAV' autopilot annunciation flashes yellow, then returns to default 'ROL' mode in green.
7. With the VOR2 source selected on the HSI, re-engage NAV mode and repeat Steps 4 through 5.
8. Simulate a Localizer/Glideslope signal on the ramp tester. Tune this frequency on NAV1 and NAV2 receivers. Set the HSI to LOC1.
9. Adjust the ramp tester signals to center the course and Glideslope deviation indicators on the PFD.
10. Press the APR key on the MFD. Verify that the LOC and GS annunciations are green on the PFD.
11. Apply right/left and up/down localizer/Glideslope signals using the ramp tester. Verify that the Flight Director and flight controls respond appropriately.
12. Repeat Steps 9 through 11 for the NAV2 receiver (LOC2 CDI).

7.4 GRS 77/GMU 44

Original GRS 77 is Reinstalled

No software loading is required if the original GRS 77 is reinstalled. This does not include units that were returned for repair since their software and configuration files were deleted during the repair testing process.

New, Repaired, or Exchange GRS 77 is Installed

Load software from the Cirrus Perspective™ software loader card if the GRS 77 was replaced with a new, repaired, or exchanged unit.

New GRS 77 Configuration Module is Installed

No software loading is required if the GRS 77 configuration module was replaced. However, the GRS77 Pitch/Roll Offset and GMU44 Magnetometer Calibration Procedures need to be performed.

Original GMU 44 is Reinstalled

No software loading is required if the original GMU 44 is reinstalled.

New, Repaired, or Exchange GMU 44 is Installed

Load software from the Cirrus Perspective™ software loader card if the GMU 44 was replaced with a new, repaired, or exchanged unit.

7.4.1 GRS Software Loading (a configuration file is not used in the GRS 77)

1. Insert the Cirrus Perspective™ software loader card into the top slot of the PFD.
2. Apply system power, insuring both MFD and PFD are in Configuration Mode.
3. On the PFD, press the NO softkey at the “DO YOU WANT TO UPDATE SYSTEM FILES?” prompt.
4. After the SYSTEM STATUS page appears, use the small FMS knob to turn to the SYSTEM UPLOAD page.
5. Activate the cursor.
6. Turn the small FMS knob to show the list of Airframe choices.
7. Highlight “AHRS ADC Options” in the pop-up box and press the ENT key.
8. In the FILE box, turn the small FMS knob to show the list of File choices.
9. Highlight the AHRS/ADC configuration file that matches the number of units in the system in the pop-up box.
10. Press the ENT key.
11. Press the CLR ALL softkey.
12. Using the FMS knob and ENT key select GRS (1 or 2) – Software file.

NOTE

Pressing the ENT key will check and uncheck the highlighted software box.

13. Once the desired files are selected, press the LOAD softkey.
14. When the upload is complete, press the ENT key to select OK in the Upload Complete window.

7.4.2 GMU Software Loading (a configuration file is not used in the GMU 44)

1. Insert the Cirrus Perspective™ software loader card into top slot of the PFD.
2. Apply system power, insuring both MFD and PFD are in Configuration Mode.
3. On the PFD, press the NO softkey at “DO YOU WANT TO UPDATE SYSTEM FILES?” prompt.
4. After the SYSTEM STATUS page appears, use the small FMS knob to turn to the SYSTEM UPLOAD page.
5. Activate the cursor.
6. Turn the small FMS knob to display the list of airframe choices.
7. Highlight “AHRS ADC Options” in the pop-up box and press the ENT key.
8. Turn the small FMS knob to display the list of file choices In the FILE box.
9. Highlight the AHRS/ADC configuration file that matches the number of units in the system in the pop-up box.
10. Press the ENT key.
11. Press the CLR ALL softkey.
12. Using the FMS knob and ENT key select GMU (1 or 2) – Software file.

NOTE

Pressing the ENT key will check and uncheck the highlighted software box.

13. Once the desired files are selected, press the LOAD softkey.
14. When the upload is complete, press the ENT key to select OK in the Upload Complete window.

7.4.3 GRS 77/GMU 44 Alignment

NOTE

Cirrus Perspective™ system software allows valid outputs from the AHRS ***prior to completion of the AHRS and magnetometer calibration procedures,*** as long as the GRS 77 can definitively determine that the aircraft is not moving**.** This gives a technician the ability to perform functional tests during aircraft assembly that require valid AHRS outputs. Additionally, a “CALIBRATE AHRS/MAG” message is displayed on the PFD until a successful magnetic calibration has been completed.

The following criteria is used by the AHRS to determine the aircraft is moving:

1. If valid GPS data is available and each component of 3D GPS velocity is less than 4 knots, the aircraft is considered “not moving” and attitude/heading will become valid.
2. If valid 3D GPS data is not available, but valid true airspeed is less than 30 knots, the aircraft is considered “not moving” and attitude/heading will become valid.
3. If both 3D GPS and true airspeed are unavailable, attitude/heading will ***not*** become valid.

No configuration is required for the GRS 77, unless the mounting bolts that secure the mounting rack are loosened. If the mounting bolts are loosened a new post-installation calibration is required. Any GMU 44 that is removed and/or replaced requires a magnetometer calibration.

There are five calibration procedures available:

- Pitch/Roll Offset (Procedure A1)
- Magnetometer Calibration, (Procedure B)
- Heading Offset Compensation, (Procedure C)
- Engine Run-Up Vibration Test, (Procedure D)
- Magnetometer Interference Test, (Procedure E)

NOTE

Procedure C is not required and should not be performed on Cirrus Perspective™ aircraft.

Turn the PFD and MFD off by pulling the PFD and MFD circuit breakers. Restart both displays in configuration mode. Follow the steps given for each procedure on the PFD GRS/GMU CALIBRATION page. The CALIBRATE command cannot be selected and activated until the installer acknowledges all required steps have been carried out by pressing the ENT key for each step.

Condition	Calibration Procedure Required		
	A1	B	D
Removed or replaced the GRS 77 without loosening mounting rack bolts	None Required Continue to Test Section		
Replaced the GRS 77 and loosened mounting rack bolts	X	X	X
Replaced the GRS 77 Configuration Module	X	X	X
Replaced the GMU 44		X	
GMU 44 was temporarily removed and reinstalled in the same location	None Required Continue to Test Section		

Table 7-1. GRS 77/GMU 44 Calibration

7.4.3.1 Procedure A: GRS 77 Pitch/Roll Offset Calibration

Figure 7-7. GRS/GMU Calibration Page

Figure 7-8. GRS/GMU Calibration Page-GRS77 #2

This procedure must be carried out with the engine off and the aircraft still. Avoid performing any other maintenance activity or entering/exiting the aircraft during this procedure.

1. Level the aircraft to 1.2° pitch nose up and wings level.
2. Initiate the AHRS Ground Pitch/Roll Aircraft Level compensation mode by performing the following steps:
   a) Enter Configuration Mode and go to GRS/GMU CALIBRATION page as shown in Figure 7-8.
   b) This page is protected and requires a keystroke password to perform the calibration. Press the following softkeys in sequence:
      i) softkey 9
      ii) softkey 10
      iii) softkey 11
      iv) softkey 12
   c) Ensure that the No. 1 GRS 77 is selected.
   d) Select PITCH/ROLL OFFSET, then press the ENT key.
   e) Follow the checklist items which are displayed and press the ENT key as each one is completed or confirmed. When the CALIBRATE field is blinking, press the ENT key to begin the procedure.
   f) After several seconds, a new checklist appears in the lower half of the PFD. Press the ENT key as each item is confirmed. When the 'CONFIRM AIRCRAFT IS LEVEL' field is blinking, press the ENT key to continue.
3. The result of the pitch/roll offset compensation is displayed. If successful, the AHRS records the required pitch and roll offsets, informs the operator of a successful conclusion, and returns to normal operation.
4. Press the ENT key to conclude this procedure.

7.4.3.2 Procedure B: GMU 44 Magnetometer Calibration Procedure

The Magnetometer Calibration Procedure must be carried out at a site that is free of magnetic disturbances. A site evaluation for magnetic disturbances can be performed for the magnetometer calibration procedure if a compass rose is not available. The accuracy of the GRS 77 and GMU 44 cannot be guaranteed if this calibration is not performed in a magnetically clean area.

NOTE

Typically, a compass rose is an acceptable location to perform the magnetometer calibration procedure. However, because not all compass roses are well maintained, even an existing compass rose should be regularly evaluated using the method described here to determine if it is free of magnetic disturbances. If evaluation of an existing compass rose indicates that magnetic disturbances are present, then an alternative location must be found to perform the procedure.

A Perspective™ System equipped aircraft can be used to evaluate a candidate site for magnetic disturbances and determine whether it is a suitable location to perform the magnetometer calibration procedure. The magnetometer calibration procedure itself contains the logic to simultaneously survey the location for magnetic cleanliness while it is computing the magnetometer calibration parameters. The Perspective equipped aircraft used to evaluate the site must have already completed the pitch/roll offset compensation procedure (Procedure A). However, prior completion of the magnetometer calibration procedure (Procedure B) is not required.

In order to evaluate a candidate site, the magnetometer calibration procedure must be performed twice: once turning clockwise around the site, and once turning counter-clockwise. Both times, the procedure should be conducted with the exception of the direction of turns around the site.

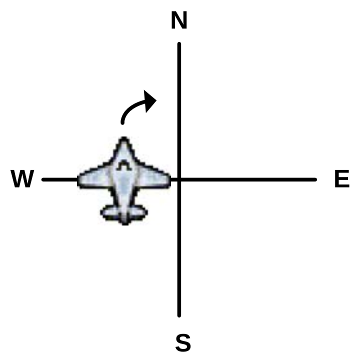
NOTE

Although the procedure should be performed by making a series of clockwise turns around the site, the procedure can also be performed by making counter-clockwise turns for evaluating the site for magnetic disturbances.

If, upon completion of the Magnetometer Calibration Procedure in each clockwise and counter-clockwise direction, the PFD displays the “CALIBRATION SUCCESSFUL / SITE IS CLEAN” message, then the candidate site is sufficiently free of magnetic disturbances and is acceptable for performing the procedure. It is important to obtain successful results in both the clockwise and counter-clockwise directions to ensure that the magnetometer sweeps over a large enough area in the candidate site.

If, upon completion of the Magnetometer Calibration Procedure in either of the two directions, the PFD displays either the “MAG FIELD AT SITE NOT UNIFORM”, or “MAG FIELD AT SITE DIFFERS FROM IGRF MODEL” message, then the site contains magnetic disturbances that are too large.

1. Start the aircraft engine according to the procedures listed in the SR20/SR22/SR22T AFMS.
2. After aircraft engine startup, taxi the aircraft to a properly calibrated compass rose or magnetically clean location determined previously.
3. At the compass rose, align the aircraft to a heading of magnetic north (±5°) with sufficient offset to the left (west) of the North/South axis to allow a clockwise turn around the compass rose to be performed. See figure below:



4. Restart the PFD and MFD in configuration mode.

NOTE

If needed, advise the control tower or ground control you may temporarily not be able to receive or transmit on your COM radios during this procedure.

5. On the PFD, go to the GRS/GMU CALIBRATION Page. Engine instruments may be monitored on this page during the procedure.

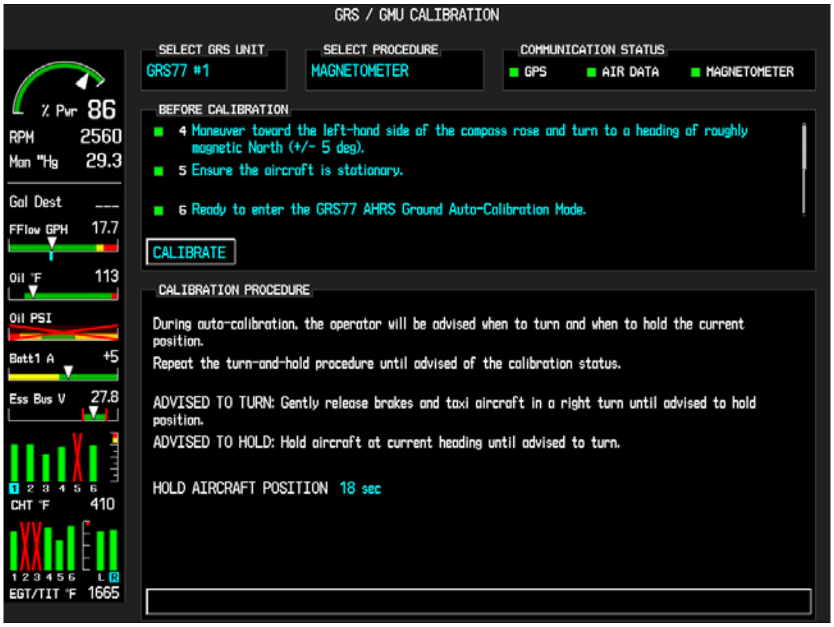


Figure 7-9. GRS/GMU Calibration Page

6. Press the following softkeys in order to unlock the page: 9, 10, 11,12.
7. On the PFD, verify GRS77 #1 is in the SELECT GRS UNIT window.
8. Move the cursor to the SELECT PROCEDURE window and use the FMS knob and ENT key to select MAGNETOMETER. If both GMU 44 units need to be calibrated at the same time, follow these steps:
   - Go to the GRS/GMU CALIBRATION page on the MFD.
   - Press the following softkeys in order to unlock the page: 9, 10, 11, 12.
   - Activate the cursor and select GRS77 #2 in the SELECT GRS UNIT window.
   - Move the cursor to the SELECT PROCEDURE window and use the FMS knob and ENT key to select MAGNETOMETER.
   - Perform the following steps on the PFD and MFD at the same time.
9. Use the large FMS knob to move the cursor to the first item in the BEFORE CALIBRATION window.
10. Follow the checklist items displayed on the PFD and press the ENT key as each one is completed. When the CALIBRATE field is blinking, press the ENT key to begin the procedure. If calibrating both GMU 44 units at the same time, be sure to complete the steps on both displays at the same time. The PFD advises the operator when to turn the aircraft, when to stop, and when to turn again.
11. Upon instruction to turn, taxi the aircraft in a right turn. After approximately 25° to 30° of turn from the last heading, the PFD advises the operator to stop the aircraft.

NOTE

Due to the difficulties in executing smooth and accurate turns, the PFD may incorrectly interpret a station and instruct to "HOLD POSITION" prior to full completion of a 30° turn. If this scenario occurs, ignore the "HOLD POSITION" command and use outside references to complete the approximate 30° turn. Instead of using the PFD instruction to turn as a real-time indication of when to turn, simply judge the 30° (±5°) turn increments of the aircraft by using the compass rose radials. Dwelling at these 30° increments for the time recommended by the PFD should result in successful calibration. The PFD guides the operator to dwell at multiple headings around a complete circle.

NOTE

Due to high winds or excessive airframe vibration, the operator may encounter a condition where the PFD restarts the 18-second countdown without full completion of the previous countdown. If this occurs more than once for a given station, begin turning to the next station (approximately 30°). A minimum of two successful stations according to a quadrant is required, where a successful station is a full 18-second countdown followed by instruction to move. Ensure that at least two stations according to a quadrant are completed. It may sometimes be required to dwell at a station after a countdown restart. A maximum of 30 stations is allowed for the entire calibration procedure. If too many countdown restarts occur, the calibration will fail and the message 'TOO MANY STATIONS' is displayed.

NOTE

Aircraft rocking from excessive winds may prevent the calibration test from passing. If repeated attempts in windy conditions do not pass, wait until the winds calm before reattempting the procedure.

12. Repeat the turn-and-stop process until the PFD advises that a successful calibration is complete. The GRS 77 AHRS then enters its normal operational mode. Press the ENT button on the PFD to conclude the procedure.

7.4.3.3 Procedure D: GRS77 Engine Run-Up Vibration Test

Calibration Procedures A1 and B are not required prior to performing this procedure. This procedure verifies the AHRS mounting is sufficiently rigid and insensitive to vibration.

Figure 7-10. Engine Run-Up Test Display

1. Start the aircraft engine according to the procedures listed in the SR20/SR22/SR22T AFMS.

NOTE

If needed, advise the control tower or ground control you may temporarily not be able to receive or transmit on your COM radios during this procedure before restarting the system in config mode.

2. Restart the PFD and MFD in configuration mode.
3. Go to the GRS/GMU CALIBRATION Page on the PFD. Engine instruments may be monitored on this page during this procedure.
4. Press the following softkeys in order to unlock the page: 9, 10, 11,12.
5. Use the FMS knob and ENT key in the SELECT GRS UNIT window to select the GRS 77 you need to test.
6. Move the cursor to the SELECT PROCEDURE window and use the FMS knob and ENT key to select ENGINE RUN-UP TEST.
7. Follow the checklist items and press the ENT key as each one is completed or confirmed.

8. When the CALIBRATE field is blinking, press the ENT key to begin the procedure. The PFD display instructs the operator to gradually increase power from idle to full throttle and back to idle over a period of 1-2 minutes.
9. When the operator has completed the engine run-up and the engine is back to an idle setting, press the ENT key. The TEST COMPLETE field stops blinking and the process is complete.
10. The PFD informs the operator if the installation has passed or failed the vibration test. If the test fails, the specific measurements causing the failure are identified and associated numeric values are displayed on the PFD.
11. The following are potential causes for failure of the engine run-up test. Correct the condition and retest to confirm resolution.
    - Vibration motion of GRS77 and/or GMU44 caused by neighboring equipment and/or supports.
    - The mounting screws and other hardware for GRS77 and/or GMU44 are not firmly attached.
    - The GRS77 connector is not firmly attached to the unit.
    - Cabling leading to GRS77 or GMU44 is not firmly secured to the supporting structure.
    - An engine/propeller may be significantly out of balance.

7.4.3.4 Procedure E: GMU 44 Magnetometer Interference Test

A magnetometer interference test is available for troubleshooting and/or verifying a magnetically 'clean' installation of the GMU 44. This test exercises various devices on the aircraft that could affect the magnetic field as measured by the GMU 44 (examples include navigation/strobe lights, control servos, etc). It is generally not necessary to start the aircraft engine to run this test (in certain instances where it is suspected that the alternator or magnetos are causing magnetic interference, it may be appropriate to start the engine and turn the alternator on and then off during a portion of the test). Procedures A1, B, C and D are not required before performing this test.

Figure 7-11. Magnetometer Interference Test

1. Apply system power, insuring both MFD and PFD are in Configuration Mode.
2. Go to the GRS/GMU CALIBRATION page on the PFD.
3. Press the following softkeys in order to unlock the page: 9, 10, 11, 12.
4. In the SELECT GRS UNIT window, use the FMS knob and ENT key to select the GRS 77 you need to test.
5. Move the cursor to the SELECT PROCEDURE window and use the FMS knob and ENT key to select MAG INTERFERENCE TEST.
6. Follow the checklist items on the PFD, and press the ENT key as each one is completed or confirmed. When the CALIBRATE field is blinking, press the ENT key to begin the procedure.
7. Follow the checklist items displayed on the PFD, and press the ENT key as each one is completed or confirmed.

NOTE

The third item on the checklist instructs the operator to "prepare a detailed test sequence with precise start and stop times for exercising all electronic devices". Only the electronic devices that are likely to affect the operation of the GMU 44 magnetometer need be included in the test sequence. The list of relevant electronic devices varies from aircraft to aircraft. An example of an appropriate test sequence is given in Table 7-3.

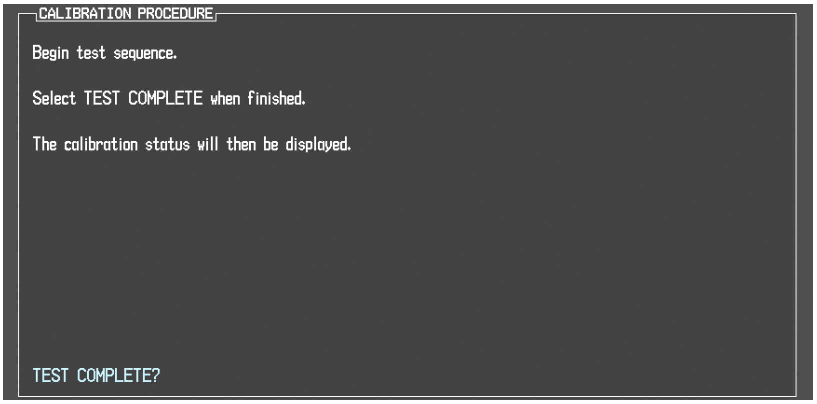
Table 7-3. Magnetometer Interference Test Sequence

Elapsed Time Since Start of Test (min:secs)	Action
0:00	Test begins
0:10	Aileron full right
0:20	Aileron full left
0:30	Aileron level
0:40	Flaps down
0:50	Flaps up
1:00	Navigation lights on
1:10	Navigation lights off
1:20	Landing lights on
1:30	Landing lights off
1:40	Strobes on
1:50	Strobes off
2:00	Turn on all wing-tip lights simultaneously (typically will include navigation lights, recognition lights and strobe)
2:10	Turn off all wing-tip lights simultaneously
2:20	Pitot heat on
2:30	Pitot heat off
2:40	End of test

8. When the CALIBRATE field is blinking, press the ENT key to begin the procedure, and have a stopwatch ready to begin recording the elapsed time.

NOTE

It is important that the "time equals zero" moment corresponds with the moment the PFD first displays the blinking TEST COMPLETE? message below:



9. The operator should carry out the actions called for in the prepared test sequence.

NOTE

It is important that all actions are carried out in the order and at the precise elapsed time as specified in the prepared test sequence.

10. When the actions in the test sequence have been completed, press the ENTER button to indicate that the process is complete. When this is done, the TEST COMPLETE field stops blinking.

11. The PFD informs the operator if the installation has passed or failed the magnetometer interference test. If the test passes, no further action is required for this test.

12. If the test fails, the installation should be considered unreliable until the source of magnetic interference is identified and remedied. When the magnetometer interference test fails, record the three magnetometer maximum deviation values and their corresponding timestamps. Any maximum deviation value greater than 2.5 milliGauss indicates a problem that must be resolved. Compare the corresponding timestamps with the prepared test sequence to identify which action produced the problem. Contact Garmin for assistance in resolving the problem.

NOTE

Two common reasons for a failed magnetometer interference test are: new equipment is installed in close proximity to the GMU 44 magnetometer, and an existing or new electronic device has become grounded through the aircraft structure instead of via the proper ground wire in a twisted shielded pair.

13. Press the ENT key on the PFD to conclude this procedure.

7.4.4 GRS AHRS Testing

Verify attitude and heading on the PFD in normal mode. The AHRS attitude and heading information displayed should become valid within 1 minute of power-up, as shown in Figure 7-13 provided both GPS receivers have a valid position. If GPS is unavailable, AHRS initialization may take as long as 2 minutes (the aircraft must remain stationary).

Figure 7-12. AHRS Information Valid

Test the AHRS reversionary paths by pressing the red reversionary mode button on the audio panel located between the displays. Make sure both displays have valid AHRS information, as shown in Figure 7-14.

Figure 7-13. Reversionary Mode AHRS Information

7.4.4.1 Optional Second AHRS Test

Press the 'SENSOR' softkey on the PFD then select AHRS2.

Figure 7-14. AHRS Information Valid

7.5 GDC 74A

Original GDC 74A is Reinstalled

No software or configuration loading is required if the original GDC 74A is reinstalled. This does not include units that were returned for repair since their software and configuration files were deleted during the repair testing process.

New, Repaired, or Exchanged GDC 74A is Installed

Load software from the Cirrus Perspective™ software loader card if a new, repaired, or exchanged GDC 74A is installed.

New GDC 74A Configuration Module is Installed

The GDC configuration files must be loaded if the GDC 74A configuration module has been replaced.

NOTE

Pitot/static covers must be removed in order to successfully execute the GDC 74A software and/or configuration loading.

7.5.1 GDC Software and Configuration Loading

1. Insert the Cirrus Perspective™ software loader card into top slot of the PFD.
2. Apply system power, insuring both MFD and PFD are in Configuration Mode.
3. On the PFD, press the NO softkey at “DO YOU WANT TO UPDATE SYSTEM FILES?” prompt.
4. After the SYSTEM STATUS page appears on the PFD, use the small FMS knob to turn to the SYSTEM UPLOAD page.
5. Activate the cursor, turn the small FMS knob to show the list of airframe choices, highlight “AHRS ADC Options” in the pop-up box and press the ENT key.
6. In the FILE box, turn the small FMS knob to show the list of file choices, highlight the AHRS/ADC configuration file that matches the number of units in the system in the pop-up box and press the ENT key.
7. Press the CLR ALL softkey.
8. Using the FMS knob and ENT key select GDC (1 or 2) – software and configuration files.

NOTE

Pressing the ENT key will check and uncheck the highlighted software and configuration boxes.

9. Once the desired files are selected press the LOAD softkey.
10. When the upload is complete, press the ENT key to select OK in the Upload Complete window.

7.5.2 GDC Testing

NOTE

Allow unit to warm up for 15 minutes before performing the following tests.

Verification of the altimeter and airspeed must be performed using a pitot/static ramp tester. The static port and altimeter must be verified in accordance with Title 14 of the Code of Federal Regulations (CFR) § 91.411 and Part 43, Appendix E. The MFD must be in reversionary mode to perform the tests outlined in Appendix E.

7.5.2.1 Preparing the Perspective™ System for Part 43 Appendix E Testing

1. Press and hold the ENT key on the PFD and apply system power. Allow the MFD to start in normal mode.
2. On the PFD, rotate the FMS knob to until the display shows the GRS page group. Within the AIR DATA 1 and AIR DATA 2 (in dual ADC installations only) sub windows is the field “B ALT” which is Barometric Altitude. B ALT is equivalent to the altitude that will be displayed to the pilot on the altitude display. B ALT will be used for all CFR Part 43 Appendix E tests for system altitude.
3. Push the red reversionary button located between the displays. This activates the reversionary mode for the MFD. Baro settings can now be read from the MFD for the CFR Part 43 Appendix E tests.
4. When viewing the baro setting for the second GDC in dual installations, press the ”SENSORS” softkey on the MFD and then select “ADC 2”.
5. After completing the tests specified by § 91.411 and Part 43 Appendix E, return the MFD back to normal mode by pushing the reversionary button.

NOTE

The following tests are beyond the requirements set forth in Appendix E.

7.5.2.2 Airspeed Test

1. Use an Air Data Test Set (ADTS) to simulate air speeds shown in the table below. Wait for the ADTS to report that target values have been achieved.
2. Verify that computed air speeds shown on the PFD are within the tolerances specified in the following table:

Calibrated air speed, knots	Allowed tolerance, ±knots
50	5.0
80	3.5
100	2.0
120	2.0
150	2.0

3. Press the “SENSOR” PFD softkey and then select ADC2 (if equipped). Repeat steps 1 and 2.

7.5.2.3 Static Port Vertical Speed (Rate of Climb) Test

1. Use the ADTS to change the altitude at the rates shown in the table below.
2. Wait for the ADTS to report that target rates have been achieved.
3. Verify that the rate of climb reported by the vertical speed field on the PFD is within the tolerances specified in the table below:

Vertical Speed, feet/minute	Allowed tolerance, ±feet/minute
2000	100
0	45
-2000	100

4. Press the "SENSOR" PFD softkey and then select ADC2 (if equipped). Repeat steps 1-3.

7.5.2.4 OAT Probe Test

Check the outside air temperature (OAT) measurement shown on the PFD to make sure it reads ambient temperature.

7.5.2.5 Second OAT Probe Test in Dual ADC Installations

Select the 'SENSORS' softkey on the PFD then select ADC2 to view the second OAT in a dual ADC equipped installation. Make sure it reads ambient temperature.

7.6 GEA 71

Original GEA 71 Reinstalled

No software or configuration loading is required if the original GEA 71 is reinstalled. This does not include units that were returned for repair since their software and configuration files were deleted during the repair testing process.

New, Repaired, or Exchanged GEA 71 Installed

Load software and configuration files from the Cirrus Perspective™ software loader card if a new, repaired, or exchanged GEA 71 is installed.

NOTE

Do not cancel a software upload that is in progress. A canceled software upload may result in an unresponsive GEA 71.

7.6.1 GEA Software and Configuration Loading

1. Insert the Cirrus Perspective™ software loader card into the top card slot of the PFD.
2. Apply system power, insuring the MFD and PFD are in Configuration Mode.
3. On the PFD, press the NO softkey at "DO YOU WANT TO UPDATE SYSTEM FILES?" prompt.
4. After the SYSTEM STATUS page appears on the PFD, use the small FMS knob to turn to the SYSTEM UPLOAD page.
5. Activate the cursor, turn the small FMS knob to show the list of airframe choices, highlight your airframe model in the pop-up box, and press the ENT key.
6. In the FILE box, turn the small FMS knob to show the list of file choices, highlight the appropriate airframe configuration file in the pop-up box, and press the ENT key.
7. Press the CLR ALL softkey.
8. Using the FMS knob and ENT key select the following files:
   - GEA software
   - GEA configuration

NOTE

Pressing the ENT key will check and uncheck the highlighted software and configuration boxes.

9. Once the desired files are selected, press the LOAD softkey.
10. When the upload is complete, press the ENT key in the Upload Complete Window and select OK.
11. Move the cursor to the AIRFRAME window, turn the small FMS knob to show the list of airframe choices, highlight "Options" in the pop-up box, and press the ENT key.

12. In the FILE box, turn the small FMS knob to show the list of File choices, you will need to load any of the following Files if the aircraft is equipped with the following optional equipment :
    a. Oxygen - GEA Configuration file
    b. Ice Protection (NH and FIKI) – GEA Configuration file
    c. SR22 (only) Oil Temperature Sensors (2) – GEA Configuration file
13. Turn off the system.

7.6.2 GEA Testing

The following tests are recommended if the unit is removed or replaced.

1. Each GEA 71 sensor input must be checked with the aircraft engine off. Make sure all engine information systems are valid on the MFD, and that no GEA 71 related alerts appear on the PFD. Exercise and test all discrete, analog, and/or digital inputs and check for appropriate responses.
2. With the STBY BATT CB pulled, check to see that the STBY BATT S current from the bottom right corner of the EIS strip on the MFD is indicating 0.0 amps. No other maintenance is required when the indication is 0.0. If the STBY BATT current is indicating anything other than 0.0 amps, perform the GEA 71 Standby Battery High-Side Current Monitor Calibration procedure.

7.7 GTX 32/33

Original GTX 32/33 Reinstalled

No software or configuration loading is required if the original GTX 32/33 is reinstalled. This does not include units that were returned for repair since their software and configuration files were deleted during the repair testing process.

New, Repaired, or Exchanged GTX 32/33 is Installed

Load software and configuration files from the Cirrus Perspective™ software loader card if a new, repaired, or exchanged GTX 32/33 is installed.

NOTE

If the PFD shows that an upload has stopped before reaching 100%, the system will allow the installer to restart the upload procedure multiple times until a successful upload is accomplished. In some instances multiple software upload attempts may be required especially if a previous load was cancelled or corrupted by power loss.

7.7.1 GTX32/33 Software and Configuration Loading

1. Insert the Cirrus Perspective™ software loader card into top slot of the PFD.
2. Apply system power, insuring both MFD and PFD are in Configuration Mode.
3. On the PFD, press the NO softkey at "DO YOU WANT TO UPDATE SYSTEM FILES?" prompt.
4. After the SYSTEM STATUS page appears on the PFD, use the small FMS knob to turn to the SYSTEM UPLOAD page.
5. Activate the cursor, turn the small FMS knob to show the list of airframe choices, highlight "Options" in the pop-up box, and press the ENT key.
6. In the FILE box, turn the small FMS knob to show the list of file choices, highlight the GTX 32 (or GTX 33 if equipped) configuration file in the pop-up box and press the ENT key.
7. Press the CLR ALL softkey.
8. Using the FMS knob and ENT key select the following files:
   - GTX 32 (or GTX 33 if equipped) software
   - GTX 32 (or GTX 33 if equipped) configuration

   NOTE

   Pressing the ENT key will check and uncheck the highlighted software and configuration boxes.
9. Once the desired files are selected press the LOAD softkey.
10. When the upload is complete, press the ENT key to select OK in the Upload Complete window. Turn off the system.

7.7.2 GTX 32/33 Testing

The following tests are recommended if the unit is removed or replaced.

1. The integrated transponder/altitude reporting system must be verified in accordance with Title 14 of the Code of Federal Regulations (CFR) §§ 91.411 and 91.413.

2. For the GTX 33 transponder, make sure the aircraft registration number is properly entered in the PFD TRANSPONDER CONFIGURATION page.
3. The GTX 33 test requires the use of a Mode S Ramp Generator. The GTX 32 requires a Mode A/C Ramp Generator. Refer to Title 14 CFR Part 43 Appendix F for specific testing criteria.

7.8 GDL 69A

Original GDL 69A Reinstalled

No software or configuration loading is required if the original GDL 69A is reinstalled. This does not include units that were returned for repair since their software and configuration files were deleted during the repair testing process.

New, Repaired, or Exchange GDL 69A is Installed

Load software and configuration files from the Cirrus Perspective™ software loader card if a new, repaired, or exchanged GDL 69A is installed.

NOTE

See the GDL 69A XM Satellite Radio Activation Instructions, Garmin document part number 190-00355-04, for instructions on activating the GDL 69A.

7.8.1 GDL 69A Software and Configuration Loading

1. Insert the Cirrus Perspective™ software loader card into top slot of the PFD.
2. Apply system power, insuring both MFD and PFD are in Configuration Mode.
3. On the PFD, press the NO softkey at "DO YOU WANT TO UPDATE SYSTEM FILES?" prompt.
4. After the SYSTEM STATUS page appears on the PFD, use the small FMS knob to turn to the SYSTEM UPLOAD page.
5. Activate the cursor, turn the small FMS knob to show the list of airframe choices, highlight "Options" in the pop-up box, and press the ENT key.
6. In the FILE box, turn the small FMS knob to show the list of file choices, you will need to highlight GDL 69/69A in the pop-up box and press the ENT key.
7. Press the CLR ALL softkey.
8. Using the FMS knob and ENT key select the following files:
   - GDL 69A software
   - GDL 69A configuration

NOTE

Pressing the ENT key will check and uncheck the highlighted software and configuration boxes.

9. Once the desired files are selected press the LOAD softkey.
10. When the upload is complete, press the ENT key to select OK in the Upload Complete window.
11. Turn off the system.

7.8.2 GDL 69/69A Testing

NOTE

This section verifies correct installation of the GDL69/69A in the aircraft. *It does not activate the XM data link radio*. If the XM Radio is activated, the channel list will contain more channels than the three that are shown for a radio that has not been activated. Complete instructions for activating the XM data link are in Garmin document part number 190-00355-04.

1. Select the AUX – XM INFORMATION page on the MFD as shown below. The graphic shown below is for the AUX – XM INFORMATION page only.

Figure 7-15. XM Information Page

2. Using the channel control located in the cabin verify that you can select and deselect channels (the white arrow to the left of the channel list indicates the currently selected channel). Select channel 1 when complete.
3. Using the volume control located in the cabin verify that you can increase and decrease the XM radio volume (the volume bar at the bottom of the screen will show changes to the volume level). Set the volume to the mid position when done.
4. Check channel and volume controls for proper operation using the GRC 10 Remote Control.
5. Plug a set of headphones into one of the passenger stations and make sure you can hear the XM radio playing in both channels. Adjust the volume level to a comfortable level.
6. Plug a set of headphones into the pilot's station and make sure you can hear the XM radio playing in both channels. Adjust the volume level to a comfortable level. Repeat for copilot's headphones.

7.9 GCU 478

Original GCU 478 Reinstalled
No software loading is required if the original GCU 478 is reinstalled. This does not include units that were returned for repair since their software and configuration files were deleted during the repair testing process.

New, Repaired, or Exchanged GCU 478 Installed

Load software and gains files from the Cirrus Perspective™ software loader card if a new, repaired, or exchanged GCU 478 is installed.

7.9.1 GCU Software and Configuration Loading

1. Insert the Cirrus Perspective™ software loader card into top slot of the PFD.
2. Apply system power, insuring both MFD and PFD are in Configuration Mode.
3. On the PFD, press the NO softkey at "DO YOU WANT TO UPDATE SYSTEM FILES?" prompt.
4. After the SYSTEM STATUS page appears on the PFD, use the small FMS knob to turn to the SYSTEM UPLOAD page.
5. Activate the cursor, turn the small FMS knob to show the list of airframe choices, highlight your airframe model in the pop-up box, and press the ENT key.
6. In the FILE box, turn the small FMS knob to show the list of file choices, highlight the appropriate airframe configuration file in the pop-up box, and press the ENT key.
7. Press the CLR ALL softkey.
8. Using the FMS knob and ENT key select the following files:
    - GCU software
    - GCU configuration

NOTE

Pressing the ENT key will check and uncheck the highlighted software and configuration boxes.

9. Once the desired files are selected press the LOAD softkey.
10. When the upload is complete, press the ENT key to select OK in the Upload Complete window.
11. Turn off the system.

7.9.2 GCU Testing

Check for the proper operation of knobs and buttons.

7.10 GMC 705

Original GMC 705 Reinstalled
No software loading is required if the original GMC 705 is reinstalled. This does not include units that were returned for repair since their software and configuration files were deleted during the repair testing process.

New, Repaired, or Exchange GMC 705 Installed

Load software and gains files from the Cirrus Perspective™ software loader card if a new, repaired, or exchanged GMC 705 is installed.

7.10.1 GMC Software and Configuration Loading

1. Insert the Cirrus Perspective™ software loader card into top slot of the PFD.
2. Apply system power, insuring both MFD and PFD are in Configuration Mode.
3. On the PFD, press the NO softkey at "DO YOU WANT TO UPDATE SYSTEM FILES?" prompt.
4. After the SYSTEM STATUS page appears on the PFD, use the small FMS knob to turn to the SYSTEM UPLOAD page.
5. Activate the cursor, turn the small FMS knob to show the list of airframe choices, highlight "Options" in the pop-up box, and press the ENT key.
6. In the FILE box, turn the small FMS knob to show the list of file choices, highlight the GFC 700 (with or without YD) configuration file that matches the aircraft autopilot system in the pop-up box and press the ENT key.
7. Press the CLR ALL softkey.
8. Using the FMS knob and ENT key select the following files:
   - GMC 705 software
   - GMC 705 configuration

   NOTE

   Pressing the ENT key will check and uncheck the highlighted software and configuration boxes.
9. Once the desired files are selected press the LOAD softkey.
10. When the upload is complete, in the Upload Complete window press the ENT key and select OK.
11. Turn off the system.

7.10.2 GMC Testing

Proceed to the GFC 700 Testing Section to test the operation of the GMC controller.

7.11 GSA 80/81 Autopilot Servos and GTA82 Pitch Trim Adapter

Original GSA80/81 Servo(s) or GTA82 Reinstalled

No software loading is required if the removed servo(s) are re-installed in the same position. This does not include units that were returned for repair since their software and configuration files were deleted during the repair testing process.

New, Repaired, or Exchanged GSA80/81 Servo(s) or GTA82 Installed

Load software and gains files from the Cirrus Perspective™ software loader card if a new, repaired, or exchanged GSA 81 servo is installed;

7.11.1 GSA/GTA Software and Configuration Loading

1. Insert the Cirrus Perspective™ software loader card into top slot of the PFD.
2. Apply system power, insuring both MFD and PFD are in Configuration Mode.
3. On the PFD, press the NO softkey at "DO YOU WANT TO UPDATE SYSTEM FILES?" prompt.
4. After the SYSTEM STATUS page appears on the PFD, use the small FMS knob to turn to the SYSTEM UPLOAD page.
5. Activate the cursor, turn the small FMS knob to show the list of airframe choices, highlight "Options" in the pop-up box, and press the ENT key.
6. In the FILE box, turn the small FMS knob to show the list of file choices, highlight the GFC 700 (with or without YD) configuration file that matches the aircraft autopilot system in the pop-up box and press the ENT key.
7. Press the CLR ALL softkey.
8. Using the FMS knob and ENT key select the following files for the servo axis or GTA that was replaced:
   - Pitch/Pitch Trim/Roll/Yaw software
   - Pitch/Pitch Trim/Roll/Yaw gains

   NOTE

   Pressing the ENT key will check and uncheck the highlighted software and configuration boxes.
9. Once the desired files are selected press the LOAD softkey.
10. When the upload is complete, press the ENT key to select OK in the Upload Complete window.
11. Turn off the system.

7.11.2 GFC 700 Autopilot Testing

The following procedure verifies the proper operation of the GFC 700 AFCS. The technician performing these checks must be thoroughly familiar with how to operate the GFC 700 system. Refer to the Garmin Perspective™ System Cockpit Reference Guide for detailed operating information.

7.11.2.1 Pre-Flight Test

Figure 7-16. Pre-Flight Test

1. Turn on the system.
2. A red AFCS annunciation (

) is displayed in the upper left side of the PFD until the attitude comes up.
3. Verify that a white ‘PFT’ annunciation is displayed on the PFD after the attitude comes up, as shown in Figure 7-16.

NOTE

There is a failure in the autopilot system preventing the preflight test from starting if the AFCS annunciation remains on the PFD after the attitude comes up and never switches to a white PFT annunciation.

4. An aural alert will sound and the annunciation will clear if the test is successful.

NOTE

If the white PFT annunciation turns red, the test has failed. Troubleshoot the system to find the cause of the failure.

5. Cycle power on the system and repeat steps 2-4. This tests the aural alerting function for the other GIA 63W in the system.

6. If the aural alert is not heard, but pre-flight testing passes, engage the Autopilot by pressing the AP key and disengage the Autopilot by pressing the AP key again. Visual and aural disconnect alerting should occur. If no alert is heard, the digital audio interface between the GIA and audio panel should be checked.

7.11.2.2 AFCS Switch Checks

Perform the following checks to verify that the AFCS system buttons and switches are operating correctly.

1. Actuate the Manual Electric Pitch Trim (MEPT) switch located on the pilot control stick. The stick should drive in the requested direction. Check operation in both directions.
2. Repeat step 1 using the co-pilot MEPT.
3. Press and hold the AP DISC button while actuating the MEPT switch. Trim should not run. Release the AP DISC button.
4. Engage the Autopilot by pressing the 'AP' key on the GMC 705. Pull the AUTOPILOT circuit breaker. The Autopilot should disengage, with abnormal disconnect alerting consisting of a continuous disconnect tone and a flashing red/white 'AP' annunciation. No AFCS annunciations (e.g. AFCS, PFT, and Mistrim) should remain on the PFD. Press the A/P DISC switch to cancel the abnormal alert. Reset the AUTOPILOT breaker and watch the pre-flight test sequence again.
5. Press the GA button on the throttle lever. 'GA' should be annunciated on the PFD for both pitch and roll modes, and the command bars should indicate a wings-level climb to 7 degrees.
6. Disengage the Autopilot by pressing the AP DISC switch. Engage VS mode by pressing the VS key on the GMC 705. Verify the PFD display 'VS' in green and indicates a pitch reference of '0 FPM'.
7. Press the IAS key on the FMC 705 and verify that 'IAS' is annunciated on the PFD in green with a reference of 80 KTS (NOTE: This is the minimum speed reference for the GFC 700).
8. Press the ALT key on the FMC 705 and verify that the 'ALT' annunciation is displayed in green on the PFD with an altitude reference equal to the aircraft altitude (within the nearest 20 feet).
9. Press the FD key and verify that the mode annunciations and command bars are removed from the display.

7.11.2.3 Autopilot Clutch Overpower Check

NOTE

The GFC 700 uses electronic torque limiting and mechanical slip clutches to limit the maximum servo effort. When the system is on the ground, the electronic torque limiting is removed, allowing manual checks of the slip-clutch settings.

1. Engage the Autopilot by pressing the AP key on the GMC 705.
2. Apply force to the control stick to determine if the Autopilot clutches can be overpowered in pitch and roll. If the Autopilot clutches cannot be overpowered, check the servo clutch torque settings.
3. Engage the Yaw Damper by pressing the YD button on the GMC 705 (on aircraft so equipped).
4. Verify the ability to overpower the YD clutch by applying manual rudder inputs in both directions.

7.11.2.4 Autopilot Operation Checks

1. Engage the Autopilot by pressing the AP key on the GMC 705.
2. Press the HDG key on the GMC 705 to synchronize the heading bug to the present aircraft heading on the HSI.
3. Select Heading mode by pressing the HDG key on the GMC 705. The command bars should be level and the control stick should be stationary (very slow movement is acceptable due to the aircraft not being perfectly level).
4. Turn the HDG knob to the left and right and check that the command bars move in the correct direction and the control stick follows the command bars.
5. Holding the control stick lightly, rotate the pitch command wheel UP on the GMC 705 to increase the pitch reference. The command bars should move up and the control stick should begin moving aft. In some aircraft, the down spring may require manual assistance to get aft control stick movement.
6. Rotate the pitch command wheel DN on the GMC 705. The command bars should command down and the control stick should begin moving forward.
7. Press the AP DISC switch to disconnect the Autopilot. Center the pitch trim using the MEPT switch.
8. Engage the Autopilot by pressing the AP key on the GMC 705.
9. Command full NOSE UP or NOSE DN by rotating the control wheel on the GMC 705 in the appropriate direction. Hold the control stick firm and watch for a mistrim annunciation on the PFD.
10. While continuing to hold the control stick, press the AP DISC switch and verify that the trim drives in the same direction as the commanded NOSE UP or NOSE DN as shown by the Flight Director command bars on the PFD.

11. Press the AP DISC switch to disconnect the Autopilot, then re-engage by pressing the AP and YD keys (on YD equipped aircraft).
12. Externally push the tail of the aircraft to the left and observe the rudder deflection. Rudder movement should also be to the left.
13. Externally push the tail of the aircraft to the right and observe the rudder deflection. Rudder movement should also be to the right.

Blank Page

SECTION 8

RETURN TO SERVICE TESTING

The tests described in this section test various secondary communications paths to ensure that the desired backup paths are in place. Before starting, create a simple direct-to flight plan to an airport or other waypoint that is greater than 31 NM from the present aircraft position. Make sure the phase of flight displayed on the GPS CDI is ENR.

8.1 GPS TESTING

8.1.1 Single GPS Test Procedure

1. Place a shroud over the GIA1 GPS antenna to prevent signal reception. Verify the loss of signal on MFD AUX page. Remove the shroud.
2. Place a shroud over the GIA2 GPS antenna to prevent signal reception. Verify the loss of signal on MFD AUX page 3. Remove the shroud.
3. The following shall remain valid on the PFD:
   - Attitude and Heading from AHRS.
   - Airspeed, Altitude, Vertical Speed, and OAT from Air Data Computer.
   - GPS Course Deviation Indicator remains valid on PFD.
   - Press the ALERTS softkey and verify that the 'AHRS1 GPS – AHRS using backup GPS source' alert is given. (GPS1 failure only).

8.1.2 Dual GPS Test Procedure

1. Cover both GPS antennas. Verify the loss of signal on MFD AUX page 3. Check for desired results.
2. Remove shrouds. Allow both receivers to re-acquire satellite signals before continuing.
3. The following shall occur for a dual GPS:
   - GPS CDI is removed.
   - HSI flags DR on PFD, all GPS data AMBER.
   - Attitude and Heading remain valid from AHRS.
   - Airspeed, Altitude, Vertical Speed, and OAT remain valid from Air Data Computer.
   - GPS NAV LOST alert given (press ALERTS softkey)
   - TAWS N/A aural alert & annunciation given.
   - When GPS satellites are re-acquired, verify that the INTEG OK annunciation is given on the HSI in white for a brief period then disappears.

- After ~10 seconds of stable GPS position reacquisition, verify the TAWS AVAILABLE aural alert is given.
- Verify that the system returns to normal navigation mode (GPS CDI restored, DR annunciation removed, & GPS data magenta).

8.2 GIA TESTING

8.2.1 Single GIA Test Procedure

1. Remove power from GIA1 by pulling the NAV/GPS1 and COM1 breakers. Check for desired results.
2. Restore power to GIA1. Allow GPS1 to re-acquire satellites.
3. Remove power from GIA2 by pulling the NAV/GPS2 and COM2 breakers. Check for desired results.
4. Restore power to GIA2. Allow GPS2 to re-acquire satellites.
5. For a GIA1 failure, only the following shall flag invalid:
   - COM1/NAV1 field (PFD & MFD).
   - NAV1 CDI loses deviation bar (PFD only).
   - 'AHRS1 using backup GPS' alert given.
6. For a GIA2 failure, only the following shall flag invalid:
   - COM2/NAV 2 field (PFD & MFD).
   - NAV2 CDI loses deviation bar (PFD only).
   - 'AHRS not receiving backup GPS information' alert is given.
   - ADF/DME windows flag invalid (if equipped).

8.2.2 Dual GIA Test Procedure

1. Remove power from both GIA units. Check for desired results.
2. Restore power to both GIA units. For a dual GIA failure, the following shall occur:
   - COM1/NAV1 & COM2/NAV2 fields flag invalid.
   - GPS CDI flags DR on PFD, all GPS data AMBER.
   - Verify that 'DR' appears in amber superimposed over the aircraft icon on the MFD map and PFD inset map.
   - NAV1 & NAV2 CDI loses deviation bar.
   - XPDR field flags invalid on PFD.
   - Engine Instrument field flags invalid on MFD.
   - All AHRS & ADC fields remain valid.
   - 'AHRS1 not receiving any GPS information' alert given.

- 'GMA1 Fail' alert given.
- 'Traffic Fail' alert given (if equipped).
- Red AFCS status annunciation given (if equipped).
- TAWS FAIL annunciation given (if equipped).
- ADF/DME windows flag invalid (if equipped).

8.3 DISPLAY TESTING

Engage the autopilot (if equipped) by pressing the AP key on the MFD.

8.3.1 MFD Display Test Procedure

1. Remove power from the MFD. Check for desired results. Restore power.
2. The following shall occur when power is removed from the MFD:
    - PFD switches to reversion mode.
    - AFCS does not disconnect (if equipped).
    - Attitude and Heading remain valid from AHRS.
    - Airspeed, Altitude, Vertical Speed, and OAT remain valid from Air Data Computer.
    - Valid Engine Instrumentation appears on PFD.
    - XPDR field remains valid on PFD.
    - COM2/NAV2 fields flag invalid.
    - NAV2 CDI deviation bar is removed.
    - ADF/DME windows flag invalid (if equipped).
    - 'GDL 69 Fail' alert is given (if equipped).
    - XTALK ERROR alert is given.

8.3.2 PFD Display Test Procedure

1. Remove power from the PFD. Check for desired results.
2. Restore power.
3. The following shall occur when power is removed from the PFD:

- MFD switches to reversion mode.
- Attitude and Heading remain valid from AHRS.
- Airspeed, Altitude, Vertical Speed, and OAT remain valid from Air Data Computer.
- MFD retains engine instrumentation.
- Valid XPDR field appears on MFD.
- COM1/NAV 1 fields flag invalid.

- NAV1 CDI deviation bar is removed.
- XTALK ERROR alert is given.

8.4 GCU 478 TEST PROCEDURE

Perform a basic operational check on the GCU 478. Ensure the following:

1. Proper response to button presses, joystick positions, and knob turns.
2. Proper keypad back light dimming capability.
3. No stuck keys.
4. Proper response to joystick movements and positions.
5. Ensure the photocell is well lit.

8.5 BACKUP PATH TESTS

Pull the PFD and MFD circuit breakers and remove power from both displays before performing these tests. Reboot the PFD and MFD by pressing and holding the 12th softkey on the MFD until the words INITIALIZING SYSTEM appear.

1. Go to the GDU Page Group on the PFD in configuration mode.
2. Activate the cursor
3. Select PFD1 in the SELECT UNIT field and press ENT.
4. View the GRS 77 #1 and GDC 74 #1 DATA indicators in the ARINC 429 window and make sure both indicators are GREEN which indicates the channels are receiving data as shown in Figure 8-1.
5. Activate the cursor.
6. Select MFD1 in the SELECT UNIT field, and press the ENT key.
7. View the GRS 77 #2 and GDC 74 #2 DATA indicators in the ARINC 429 window. Make sure both indicators are GREEN which indicates the channels are receiving data as shown in Figure 8-1.

Figure 8-1. RS-232/ARINC-429 Config Page (PFD1)

8. On the PFD go to the GIA Page Group. Select the RS-232/ARINC 429 CONFIG page.
9. Verify that GIA1 is selected in the SELECT UNIT field.
10. View the data indicators for all configured RS-232 and ARINC 429 channels (except GIA DEBUG), including the GRS 77 and GDC 74 ARINC 429 channels.
11. Make sure all DATA indicators for configured channels are GREEN which indicates the channels are receiving data as shown in Figure 8-2.

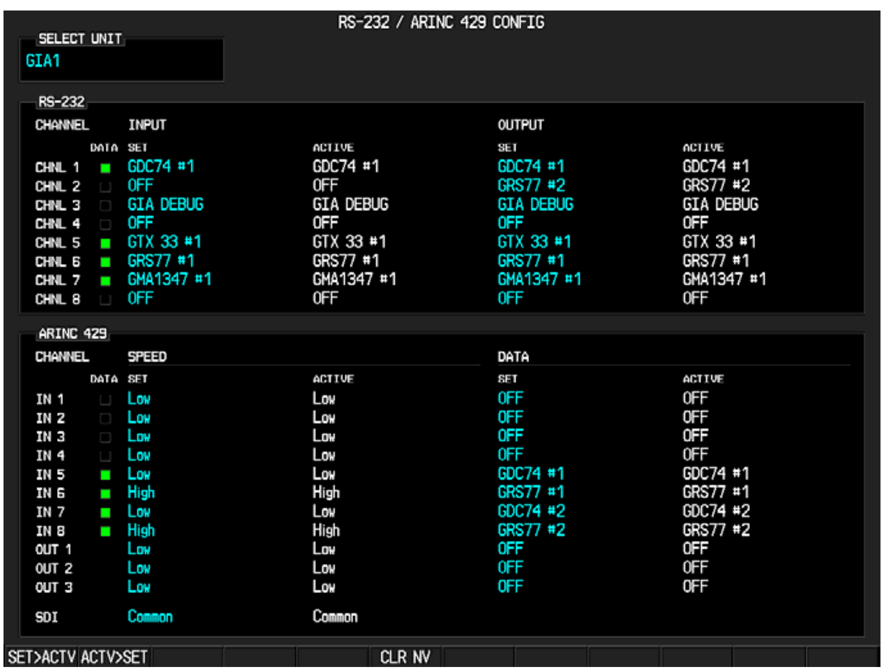


Figure 8-2. CAN/RS-485 Config Page (GIA1)

12. Activate the cursor and select GIA2 in the SELECT UNIT field, then press the ENT key.
13. Repeat Steps 9 and 10.
14. On the PFD, go to the CAN/RS-485 CONFIGURATION page in the GIA Page Group.
15. Verify that GIA1 is selected in the SELECT UNIT field.
16. Observe the data indicators for all configured RS-485 channels.
17. Make sure all DATA indicators for configured channels are GREEN, indicating the channels are receiving data as shown in Figure 8-3 and 8-4.

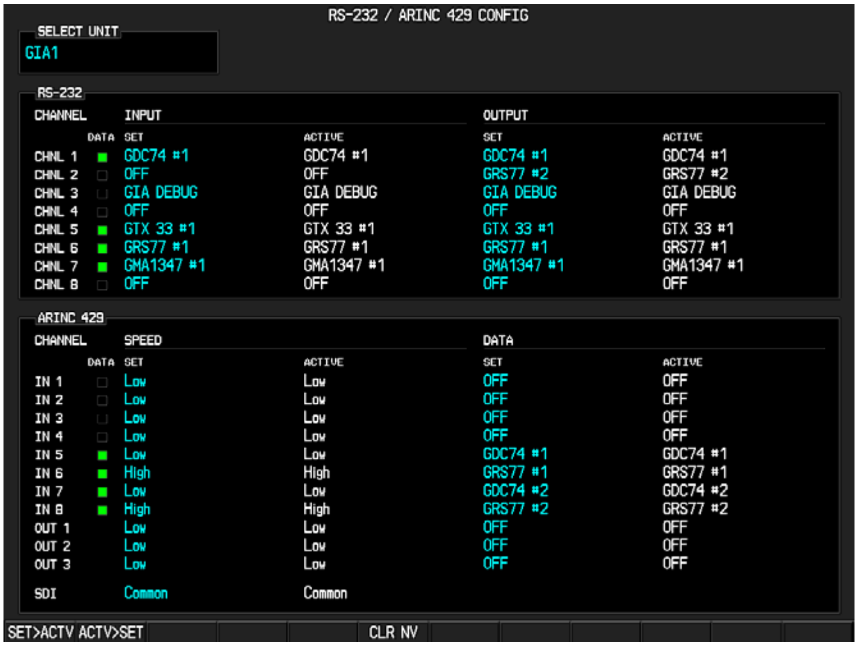


Figure 8-3. CAN/RS-485 Config Page (GIA1 Data Indicators)

18. Activate the cursor and select GIA2 in the SELECT UNIT field then press the ENT key.
19. Repeat Steps 15 and 16.

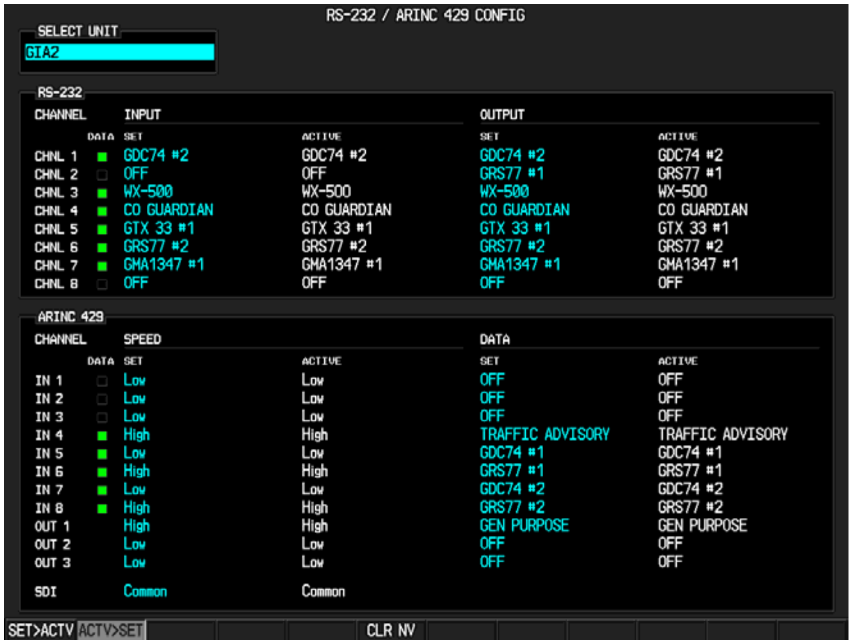


Figure 8-4. CAN/RS-485 Config Page (GIA2 Data Indicators)

8.5.1 Port Status Tests

In addition to troubleshooting via the GDU and GIA Configuration Pages, the System Data Path Configuration Page displays port status and information. The System Data Paths Configuration page (Figures 8-5 through 8-9) displays the following data when the A429, CAN, RS-232, or RS-485 data path softkey is selected:

A table containing one row for each configured LRU with the following information per row, ordered from left to right:

- A text field indicating the LRU name in the column
- A text field indicating the channel name
- A status indicator showing:
  - An N/A indication if the monitor is on and data path status is not applicable
  - A positive indication if the monitor is on and data path status is "OK"
  - A negative indication if the monitor is on and data path status is "FAIL"
  - An unknown indication if the monitor is off or the monitor is "ON" and data path status is "UNKNOWN"
- A text field indicating the port monitor status:
  - "ON" if the monitor is turned on
  - "OFF" if the monitor is turned off
- A text field indicating the following port status:
  - "OK" if the port is communicating
  - "FAIL" if the port is not communicating
  - "N/A" if the port is not applicable
  - "UNKNOWN" if the port status is unknown

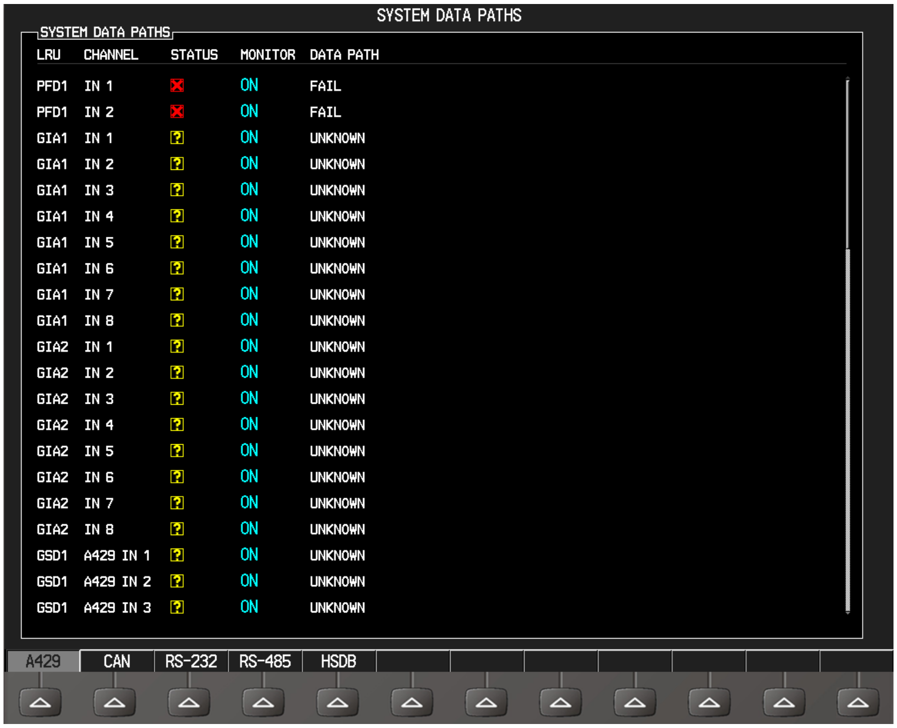


Figure 8-5. A429 Data Path Page

Figure 8-6. CAN Data Path Page

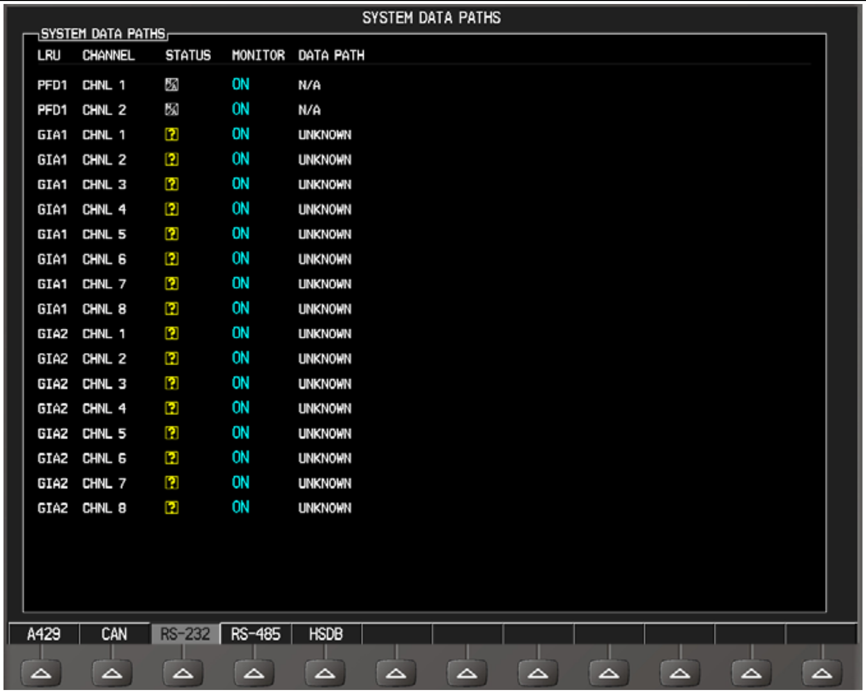


Figure 8-7. RS-232 Data Path Page

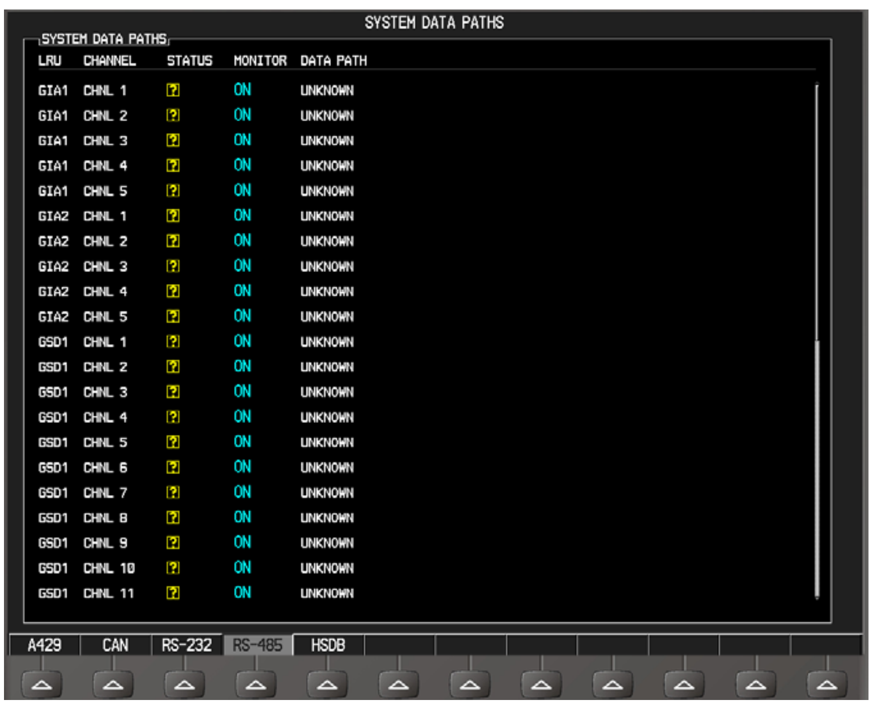


Figure 8-8. RS-485 Data Path Page

The System Data Paths Configuration page displays the following data when the HSDB data path softkey is selected:

- A table containing one row for each configured LRU with the following data per row, ordered from left to right:
    - A text field indicating the LRU name in the column
    - A drop down selectable field indicating the expected LRU for each HSDB port
    - A white text field indicating the current LRU for each HSDB port
    - A status indicator for each HSDB port:
        - An N/A indicator if the expected LRU is configured to none and there is no actual LRU online.
        - A positive indicator if the expected LRU matches actual LRU online
        - A negative indicator if the expected LRU does not match actual LRU online

Figure 8-9. HSDB Data Path Page

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SECTION 9
PERIODIC MAINTENANCE

This section contains periodic maintenance procedures. Removal and replacement of an LRU is on condition of failure.

9.1 MAINTENANCE INTERVALS

Refer to the Cirrus maintenance documentation for maintenance tasks that are required to be performed at certain intervals.

9.2 RECOMMENDED TOOLS

Use the following tools to perform the maintenance tasks described in this section:

- Voltmeter capable of measuring 0-32 Volts DC
- Phillips Screwdriver
- 3/32 inch Hex Tool
- Digital Level with 0.25 degrees of accuracy capability
- VHF NAV/COM/ILS Ramp Tester
- Transponder Ramp Tester including Mode S capability for Mode S transponder equipped aircraft
- Air Data Test Set (ADTS) capable of simulating altitude up to the aircraft's service ceiling
- GPS Indoor Repeater (if outside GPS signals cannot be acquired)
- Headset/Microphone

9.3 GENERAL MAINTENANCE PROCEDURES

Pitot/Static Leak Test

Before starting the pitot static test, allow the GDC to operate at least 15 minutes according to Garmin Service Advisory 0608. Perform a pitot/static leak test as described in Title 14 CFR §§ 91.411 and Part 43 Appendix E.

Altimeter (GDC and PFD)

According to Part 43 Appendix E, paragraph (b)(2), Garmin specifies a test procedure equivalent to Part 43 Appendix E, paragraph (b)(1) with two exceptions. The tests of sub-paragraphs (iv; Friction) and (vi; Barometric Scale Error) are not applicable because the digital outputs of the GDC are not susceptible to these types of errors.

Airspeed Function Test (GDC and PFD)

Check for correct indication.

Vertical Speed Indicator (GDC and PFD)

Check for correct indication.

GTX Transponder

Test according to Title 14 CFR §§ 91.411 and 91.413 and Part 43 Appendix F.

GRS Earth Magnetic Field Updates

The GRS utilizes an earth magnetic field model which is updated once every five years. The update is expected to be available from Garmin by July 1 of each of the following years: 2005, 2010, 2015, and every five years thereafter, as long as the GRS remains a Garmin-supported product. Otherwise, maintenance of the GRS is on condition of failure only.

GSA Servos

Conduct a visual inspection every 1000 hours or at every annual. Clean and apply grease to output gear every 1000 hours or 3 years.

GSM Servo Gearbox

Conduct a visual inspection and check slip clutches once every 12 months.

Automatic Slip Clutch Test Procedure

The automated slip clutch test procedure is installation-specific. Refer to aircraft-specific documentation as appropriate.

9.4 GFC 700 VISUAL INSPECTION PROCEDURE

1. Remove the access panels according to Cirrus maintenance documentation.
2. Inspect the servos, connectors, support structures, and control cables and make sure no corrosion, chaffing, cracks, or other defects exist.
3. Manually move the ailerons (for roll servo), elevators (for pitch servo), elevator trim wheel (for pitch trim servo), and rudder pedals (for yaw servo) from stop to stop and observe the servo, capstan, and control surface rigging. Make sure there is no binding in the control cabling and that the capstan pullies rotate freely.
4. Check the servo control cables to make sure no fraying, corrosion, or other damage exists. Replace the cable if the condition is questionable. Check the tension of each servo control cable. Refer to Cirrus maintenance documentation for cable tension specifications.
5. Inspect the GFC 700 system wiring to make sure no chaffing, wear, or other damage exists.

9.5 GSA GREASING PROCEDURE

NOTE

Clean and apply Aeroshell 33MS grease (which is preferred), or Aeroshell 17 to output gear every 1000 hours or 3 years, whichever comes first.

NOTE

It is not necessary to remove all of the grease from the output gear, only the excess grease. Do not use solvents to clean the output gear.

1. Remove each servo.
2. Remove excess grease build-up from the single servo output gear using a lint-free cloth.
3. Apply a thin coat of grease to the servo output gear using a brush or other applicator (see note above).
4. Reinstall the servos.
5. Rotate control surfaces through their range of motion to ensure freedom of movement.

9.6 GDC RVSM ALTITUDE INSPECTION

Operation with the GDC at RVSM altitudes requires an accuracy inspection every 12 months. Refer to the GDC Field Calibration Tool Instructions if recalibration is required. The table below provides the criteria and associated action for altitude inspection.

Table 9-1. GDC RVSM Altitude Inspection Criteria

Inspection Pressure-Altitude (ft)	Error, |x| (ft) at Inspection	Action for Associated Error
29,000	x ≤ 40	No Action
	40 < x ≤ 120	Use Field Calibration Tool
	120 < x	Replace Unit
35,000	x ≤ 40	No Action
	40 < x ≤ 120	Use Field Calibration Tool
	120 < x	Return Unit to Garmin
41,000	x ≤ 40	No Action
	40 < x ≤ 120	Use Field Calibration Tool
	120 < x	Return Unit to Garmin

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SECTION 10
SYSTEM RECONFIGURATION

The information in this section describes how to completely reconfigure the system. The initial system software upload and configuration took place at the time of installation as described in the installation manual. Section 7 of this manual explained how to upload, configure, and test software for a replacement LRU.

NOTES

Perform system reconfiguration only after talking with GARMIN Field Service to find out if there is an alternate solution to a problem. System reconfiguration is a last resort when all other troubleshooting efforts have been exhausted.

10.1 DATA CARDS

Garmin recommends using SanDisk cards to load system software and configuration files. If software loading problems occur when using another brand of card, replace the card with a SanDisk card and attempt the upload procedure again.

10.2 SOFTWARE PART NUMBERS

Software part numbers and software versions are not listed in this manual. For actual software versions and part numbers refer to Cirrus maintenance documentation.

NOTE

Screen shots and examples in this section are used to illustrate the software and configuration loading process. They are representations only. Always refer to the correct GA drawing for the correct software file names, versions, and part numbers.

10.3 HARDWARE AND SOFTWARE COMPATIBILITY CHECK

Before installing hardware, ensure that hardware part numbers are compatible with the Garmin SR20/SR22/SR22 Turbo Normalized loader card that is to be used. The part number of this card is directly associated with the combination of software file part numbers and version levels that are defined on the card. Should software part numbers or versions change, a new loader card part number is issued.

Cirrus drawings show all available combinations of hardware and loader cards for the appropriate TC configuration. Using the correct Cirrus drawing, the technician must verify that all hardware part numbers are compatible with the loader card to be used. The Cirrus drawing allows the technician to correlate each LRU hardware part number to a compatible loader.

NOTE

After verifying hardware/loader card compatibility, record the loader card part number, and all LRU hardware part and serial numbers in the appropriate aircraft records before proceeding.

10.4 SYSTEM SOFTWARE LOADING AND CONFIGURATION PROCEDURE

The Perspective™ system is not airworthy unless software loading and configuration procedures are accomplished successfully as described in the following procedures. The following diagram gives an overview of the software/configuration sequence for the system. **Each LRU software load must be completed successfully.**

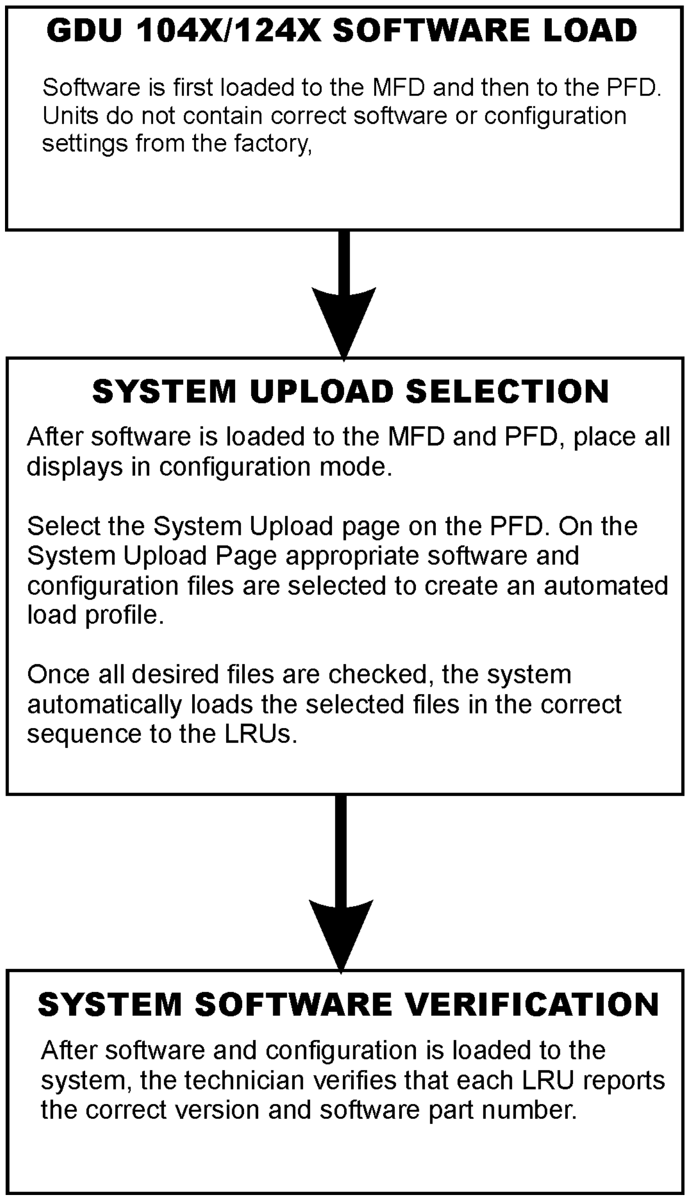


Figure 10-1. Software Sequence Overview

10.4.1 System Power Up

1. Turn on the ground power unit (if used).
2. Turn on the BATTERY master switches.
3. Turn on the AVIONICS MASTER switch. All system equipment should be receiving power.

10.4.1 Cooling Fan Check

1. Verify display cooling fan operation. If necessary, remove each display temporarily and visually make sure they are operating.
2. Make sure the avionics cooling fans in the remote avionics bay are operating.

10.4.2 MFD and PFD Software Load

1. Pull the MFD and PFD circuit breakers.
2. Insert the correct loader card into the top card slot on the MFD.
3. While holding the rightmost softkey on the MFD, restore power by closing the MFD circuit breaker.
4. When the words 'INITIALIZING SYSTEM' appear in the upper left corner of the MFD, release the key.
5. Press the rightmost softkey on the MFD to acknowledge the prompt to load new software. An 'Updating System Files' screen appears. New software is now being loaded to the MFD. After the system files are loaded to the MFD the user will be prompted to load the splash screen. Refer to step 8. When complete, the MFD starts in configuration mode.
6. Remove the loader card from the MFD and insert it into the top card slot on the PFD. Repeat steps 3 through 5 for the PFD.
7. When the PFD load is complete, it starts in the configuration mode. Do not remove power. After the system files are loaded to the PFD the user will be prompted to load the splash screen. Refer to step 8.
8. Update the splash screen after loading the MFD and PFD files.

NOTE

For the rest of the software/configuration procedure do not operate the MFD while loading software or configuration files unless specifically instructed to do so. A failed or cancelled load may result.

10.4.3 System Software Upload

1. Select the System Upload page on the PFD using the small FMS knob (Figure 10-2).
2. Activate the cursor, and use the small FMS knob to highlight the airframe type in the AIRFRAME field. Select the appropriate aircraft type (SR20/SR22/SR22 Turbo Normalized).
3. Press the ENT key.

NOTE

Ensure that the correct airframe type is selected before proceeding, otherwise incorrect configuration information will be loaded.

4. Once an airframe type is selected the cursor moves to the FILE window. Turn the small FMS knob to active the drop-down menu. Move the cursor to highlight the appropriate aircraft model and press ENT.

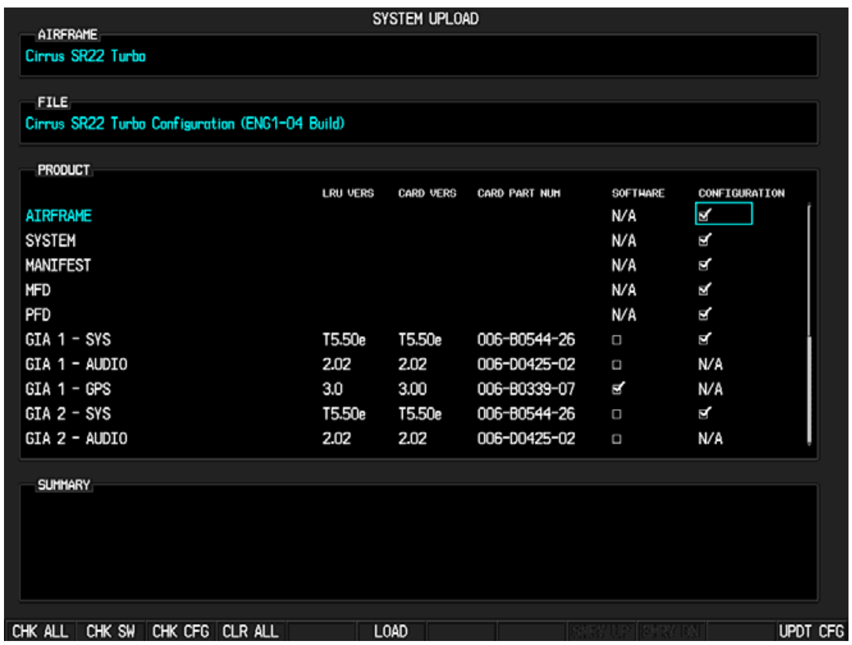


Figure 10-2. System Upload Page

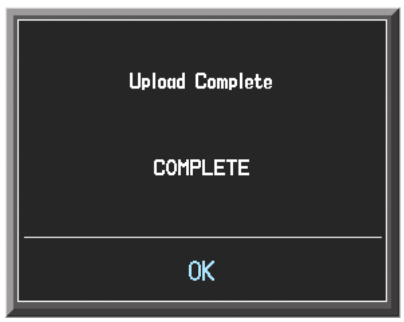
5. The PRODUCT window will populate and display software and configuration file information for each LRU. The 'LRU VERS' column shows the currently loaded software version in the LRU, whereas the 'CARD VERS' column shows the LRU software version stored on the loader card. Each check designates a file to be loaded to the system. By default, if an inequality between the LRU and CARD columns exists, the SOFTWARE and CONFIGURATION boxes will be preselected (checked). The following softkeys provide an easy way to select files:

- CHK ALL: Selects all files, both configuration and software.
- CHK SW: Selects all SW files only.
- CHK CFG: Selects all configuration files only.
- CLR ALL: Clears all selections.

NOTE

Leave all check boxes selected for a first time software and configuration load to a new installation.

6. After making sure the desired software and configuration files are checked, press the LOAD softkey. The system automatically begins loading software and default configuration files to the selected LRUs in their proper order.
7. When the system finishes loading, it prompts the technician accordingly. Press the ENT key to acknowledge that the upload is finished:



8. Verify that each column indicates 

in green when the loading process has finished and inspect the SUMMARY window as well to ensure a successful load.

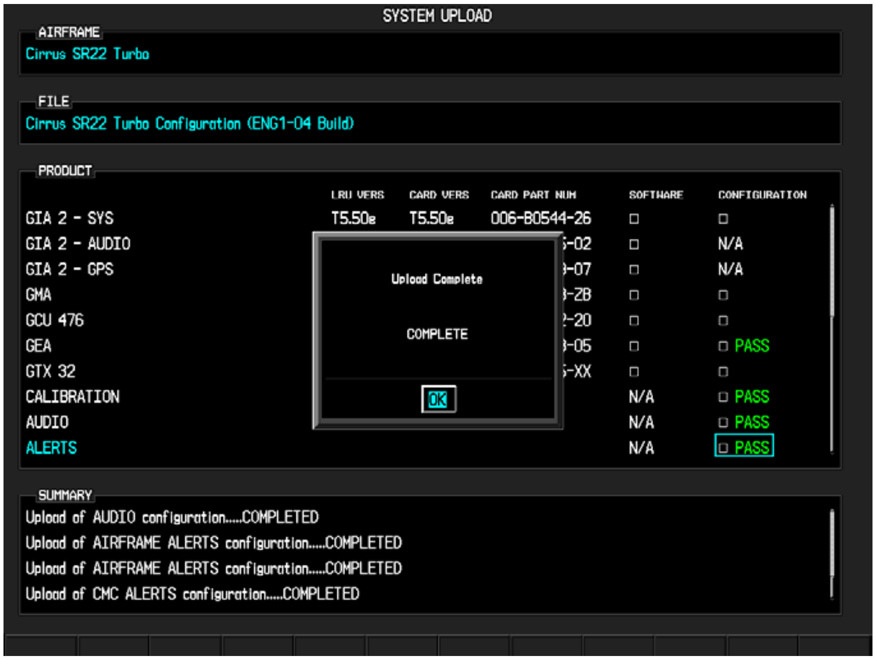


Figure 10-3. Upload Complete Window

10.4.4 Optional Systems Activation

This section describes the steps that must be completed in order to configure the system with optional equipment.

IMPORTANT: After loading all the options, place the loader card back in the MFD, select 'NO' when prompted for system load then select 'YES' to update the Splash Screen. Do this as the last step since loading the AIRFRAME file deletes the Cirrus Splash Screen. Do the same thing with the PFD.

NOTE

If the splash screen is not loaded, the 'Splash Screen Cannot Be Found' message continues to be displayed whenever power is applied.

NOTE

If the configuration for an optional system is inadvertently loaded for a system that is NOT installed, the *aircraft* configuration files must be reloaded. For example, if the ADF option is loaded, and the aircraft is not equipped with an ADF, the default configuration files must be reloaded. All optional systems must be reconfigured after reloading the default configuration files.

A. GTX 33ES Option

Follow this procedure if the aircraft being updated is equipped with the GTX 33ES option. Skip this procedure if the aircraft is not equipped with this option.

1. Activate the cursor and rotate the FMS knob once to activate the AIRFRAME menu on the System Upload page.
2. Select 'Options' from the AIRFRAME window and press ENT.
3. Select 'GTX 33ES Installation Option' from the FILE window, and press ENT.
4. Press the LOAD softkey.
5. Monitor the status of the upload. When the upload is finished, press ENT to acknowledge.
6. View the SUMMARY field and ensure that all items are complete. Verify that PASS appears in green at the check boxes.

B. DME Option

Follow this procedure if the aircraft being updated is equipped with the Honeywell model KN63 DME option. Skip this procedure if the aircraft is not equipped with this option.

1. Activate the cursor and rotate the FMS knob once to activate the AIRFRAME menu on the System Upload page.
2. Select ‘Options’ from the AIRFRAME window and press ENT.
3. Select ‘KN63 DME Installation Option’ from the FILE window, and press ENT.
4. Press the LOAD softkey.
5. Monitor the status of the upload. When the upload is finished, press ENT to acknowledge.
6. View the SUMMARY field and ensure that all items are complete. Verify that PASS appears in green at the check boxes.

C. ADF Option

Follow this procedure to configure the system if the aircraft is equipped with the Bendix/King KR-87 ADF option. Skip this procedure if the aircraft is not equipped with this option.

1. Activate the cursor and rotate the FMS knob once to activate the AIRFRAME menu on the System Upload page.
2. Select ‘Options’ from the AIRFRAME window and press ENT.
3. Select ‘KR87 ADF Installation Option’ from the FILE window, and press ENT.
4. Press the LOAD softkey.
5. Monitor the status of the upload. When the upload is finished, press ENT to acknowledge.
6. View the SUMMARY field and ensure that all items are complete. Verify that PASS appears in green at the check box.

D. Ice Protection Installation Option (No-Hazard)

Follow this procedure to configure the system if the aircraft being updated is equipped with the Ice Protection (NH) option. Skip this procedure if the aircraft is not equipped with this option.

1. Activate the cursor and rotate the FMS knob once to activate the AIRFRAME menu on the System Upload page.
2. Select 'Options' from the AIRFRAME window and press ENT.
3. Select 'No-Hazard IPS Installation Option' from the FILE window, and press ENT.
4. Press the LOAD softkey.
5. Monitor the status of the upload. When the upload is finished, press ENT to acknowledge.
6. View the SUMMARY field and ensure that all items are complete. Verify that PASS appears in green at the check boxes.

E. SR22 TN DIN IEC 751 Oil Temperature Sensor

Follow this procedure to configure the system if the aircraft being updated is equipped with a SR22 TN DIN IEC 751 Oil Temperature Sensor. Skip this procedure if the aircraft is not equipped with this option.

1. Activate the cursor and rotate the FMS knob once to activate the AIRFRAME menu on the System Upload page.
2. Select 'Options' from the AIRFRAME window and press ENT.
3. Select 'SR22 TN DIN IEC 751 Oil Temperature Sensor Option' from the FILE window, and press ENT.
4. Press the LOAD softkey.
5. Monitor the status of the upload. When the upload is finished, press ENT to acknowledge.
6. View the SUMMARY field and ensure that all items are complete. Verify that PASS appears in green at the check boxes.

F. SR22 TN MS 28034 Oil Temperature Sensor

Follow this procedure to configure the system if the aircraft being updated is equipped with a SR22 TN MS 28034 Oil Temperature Sensor. Skip this procedure if the aircraft is not equipped with this option.

1. Activate the cursor and rotate the FMS knob once to activate the AIRFRAME menu on the System Upload page.
2. Select 'Options' from the AIRFRAME window and press ENT.
3. Select 'SR22 TN MS 28034 Oil Temperature Sensor Option' from the FILE window, and press ENT.
4. Press the LOAD softkey.
5. Monitor the status of the upload. When the upload is finished, press ENT to acknowledge.
6. View the SUMMARY field and ensure that all items are complete. Verify that PASS appears in green at the check boxes.

G. Oxygen Option

Follow this procedure to configure the system if the aircraft being updated is equipped with the Precise Flight Oxygen System option. Skip this procedure if the aircraft is not equipped with this option.

1. Activate the cursor and rotate the FMS knob once to activate the AIRFRAME menu on the System Upload page.
2. Select 'Options' from the AIRFRAME window and press ENT.
3. Select 'Oxygen Installation Option' from the FILE window, and press ENT.
4. Press the LOAD softkey.
5. Monitor the status of the upload. When the upload is finished, press ENT to acknowledge.
6. View the SUMMARY field and ensure that all items are complete. Verify that PASS appears in green at the check boxes.

H. SKYWATCH Option

Follow this procedure to configure the system if the aircraft being updated is equipped with the L-3 SKY 497 SKYWATCH option. Skip this option if the aircraft is not equipped with this option.

1. Activate the cursor and rotate the FMS knob once to activate the AIRFRAME menu on the System Upload page.
2. Select 'Options' from the AIRFRAME window and press ENT.
3. Select 'Skywatch 497 Installation Option' from the FILE window and press ENT.
4. Press the LOAD softkey.
5. Monitor the status of the upload. When the upload is finished, press ENT to acknowledge.
6. View the SUMMARY field and ensure that all items are 'complete'. Verify that PASS appears in green at the check boxes.

I. S-TEC 55X/55SR

Follow this procedure to configure the system if the aircraft being updated is equipped with an S-TEC 55X/55SR. Skip this procedure if the aircraft is not equipped with this option.

1. Activate the cursor and rotate the FMS knob once to activate the AIRFRAME menu on the System Upload page.
2. Select 'Options' from the AIRFRAME window and press ENT.
3. Select 'S-TEC 55X/55SR Option' from the FILE window, and press ENT.
4. Press the LOAD softkey.
5. Monitor the status of the upload. When the upload is finished, press ENT to acknowledge.
6. View the SUMMARY field and ensure that all items are complete. Verify that PASS appears in green at the check boxes.

J. STORMSCOPE Option

Follow this procedure to configure the system if the aircraft being updated is equipped with an L-3 WX-500 STORMSCOPE option. Skip this procedure if the aircraft is not equipped with this option.

1. Activate the cursor and rotate the FMS knob once to activate the AIRFRAME menu on the System Upload page.
2. Select ‘Options’ from the AIRFRAME window and press ENT.
3. Select ‘Stormscope 500 Installation Option’ from the FILE window, and press ENT.
4. Press the LOAD softkey.
5. Monitor the status of the upload. When the upload is finished, press ENT to acknowledge.
6. View the SUMMARY field and ensure that all items are ‘complete’. Verify that PASS appears in green at the check boxes.

K. Carbon Monoxide Detection Option

NOTE

If the aircraft being updated is equipped with the Guardian CO Carbon Monoxide detector follow this procedure to configure the system. Skip this procedure if the aircraft is not equipped with this option.

1. At the System Upload page, activate cursor and rotate the FMS knob once to activate the AIRFRAME menu.
2. Select ‘Options’ from the AIRFRAME window and press ENT.
3. From the FILE window, select ‘CO Guardian Installation Option’ and press ENT.
4. Press the LOAD softkey. Monitor the status of the upload. When the upload is finished, press ENT to acknowledge.
6. View the SUMMARY field and ensure that all items are ‘complete’. Verify that PASS appears in green at the check boxes.

L. Avidyne TAS 6XX

Follow this procedure to configure the system if the aircraft being updated is equipped with an Avidyne TAS 6xx. Skip this procedure if the aircraft is not equipped with this option.

1. Activate the cursor and rotate the FMS knob once to activate the AIRFRAME menu on the System Upload page.
2. Select ‘Options’ from the AIRFRAME window and press ENT.
3. Select ‘Avidyne TAS 6XX Option’ from the FILE window, and press ENT.
4. Press the LOAD softkey.
5. Monitor the status of the upload. When the upload is finished, press ENT to acknowledge.
6. View the SUMMARY field and ensure that all items are ‘complete’. Verify that PASS appears in green at the check boxes.

M. Disable GDU Fan Monitoring

NOTE

Always load this option to deactivate the fan monitoring.

Follow this procedure to configure the system if the aircraft being updated is equipped with the Disable GDU Fan Monitoring option. Skip this procedure if the aircraft is not equipped with this option.

1. Activate the cursor and rotate the FMS knob once to activate the AIRFRAME menu on the System Upload page.
2. Select ‘Options’ from the AIRFRAME window and press ENT.
3. Select ‘Disable GDU Fan Monitoring Option’ from the FILE window, and press ENT.
4. Press the LOAD softkey.
5. Monitor the status of the upload. When the upload is finished, press ENT to acknowledge.
6. View the SUMMARY field and ensure that all items are ‘complete’. Verify that PASS appears in green at the check boxes.

N. EVS Installation

Follow this procedure to configure the system if the aircraft being updated is equipped with an EVS Installation option. Skip this procedure if the aircraft is not equipped with this option.

1. Activate the cursor and rotate the FMS knob once to activate the AIRFRAME menu on the System Upload page.
2. Select 'Options' from the AIRFRAME window and press ENT.
3. Select 'EVS Installation Option' from the FILE window, and press ENT.
4. Press the LOAD softkey.
5. Monitor the status of the upload. When the upload is finished, press ENT to acknowledge.
6. View the SUMMARY field and ensure that all items are 'complete'. Verify that PASS appears in green at the check boxes.

O. Ice Protection Installation Option (Flight Into Known Icing; FIKI)

Follow this procedure if the aircraft being updated is equipped with the Ice Protection (FIKI) option. Skip this procedure if the aircraft is not equipped with this option.

1. Activate the cursor and rotate the FMS knob once to activate the AIRFRAME menu on the System Upload page.
2. Select 'Options' from the AIRFRAME window and press ENT.
3. Select 'FIKI IPS Installation Option' from the FILE window, and press ENT.
4. Press the LOAD softkey.
5. Monitor the status of the upload. When the upload is finished, press ENT to acknowledge.
6. View the SUMMARY field and ensure that all items are 'complete'. Verify that PASS appears in green at the check boxes.

P. GDL 69/69A Option

Follow this procedure to configure the system if the aircraft being updated is equipped with the Garmin GDL 69/69A. Skip this procedure if the aircraft is not equipped with this option.

1. Activate the cursor and rotate the FMS knob once to activate the AIRFRAME menu on the System Upload page.
2. Select ‘Options’ from the AIRFRAME window and press ENT.
3. Select ‘GDL 69/69A Installation Option’ from the FILE window, and press ENT.
4. Press the LOAD softkey.
5. Monitor the status of the upload. When the upload is finished, press ENT to acknowledge.
6. View the SUMMARY field and ensure that all items are ‘complete’. Verify that PASS appears in green at the check boxes.

Q. GFC 700 Option (with and without Yaw Damper)

Perform the following procedure if the aircraft is equipped with the Garmin GFC 700 AFCS option. Skip this procedure if the aircraft is not equipped with this option.

1. Activate the cursor and rotate the FMS knob once to activate the AIRFRAME menu on the System Upload page.
2. Select ‘Options’ from the AIRFRAME window and press ENT.
3. Select ‘GFC 700 Installation Option’ from the FILE window, and press ENT.
4. Press the LOAD softkey.
5. Monitor the status of the upload. When the upload is finished, press ENT to acknowledge.
6. View the SUMMARY field and ensure that all items are ‘complete’. Verify that PASS appears in green at the check boxes.

R. GTX 32/33 Option

Follow this procedure if the aircraft being updated is equipped with the GTX 33 or 32 option. Skip this procedure if the aircraft is not equipped with this option.

1. Activate the cursor and rotate the FMS knob once to activate the AIRFRAME menu on the System Upload page.
2. Select ‘Options’ from the AIRFRAME window and press ENT.
3. Select ‘GTX 33 Installation Option’ or ‘GTX 32 Installation Option’ as appropriate from the FILE window, and press ENT.
4. Press the LOAD softkey.
5. Monitor the status of the upload. When the upload is finished, press ENT to acknowledge.
6. View the SUMMARY field and ensure that all items are ‘complete’. Verify that PASS appears in green at the check boxes.

S. Single AHRS/Single ADC Option

Follow this procedure to configure the system if the aircraft is equipped with a single AHRS and ADC option. Skip this procedure if the aircraft is not equipped with this option.

1. Activate the cursor and rotate the FMS knob once to activate the AIRFRAME menu on the System Upload page.
2. Select ‘Options’ from the AIRFRAME window and press ENT.
3. Select ‘Single AHRS / Single ADC Installation Option’ from the FILE window and press ENT.
4. Press the LOAD softkey.
5. Monitor the status of the upload. When the upload is finished, press ENT to acknowledge.
6. View the SUMMARY field and ensure that all items are ‘complete’. Verify that PASS appears in green at the check boxes.

T. Dual AHRS/Single ADC Option

The following configuration procedure MUST be performed if the aircraft is equipped with a Dual AHRS and a single ADC. Skip this procedure if the aircraft is not equipped with this option.

1. Activate the cursor and rotate the FMS knob once to activate the AIRFRAME menu on the System Upload page.
2. Select 'Options' from the AIRFRAME window and press ENT.
3. Select 'Dual AHRS / SingleADC Installation Option' from the FILE window, and press ENT.
4. Press the LOAD softkey.
5. Monitor the status of the upload. When the upload is finished, press ENT to acknowledge.
6. View the SUMMARY field and ensure that all items are 'complete'. Verify that PASS appears in green at the check boxes.

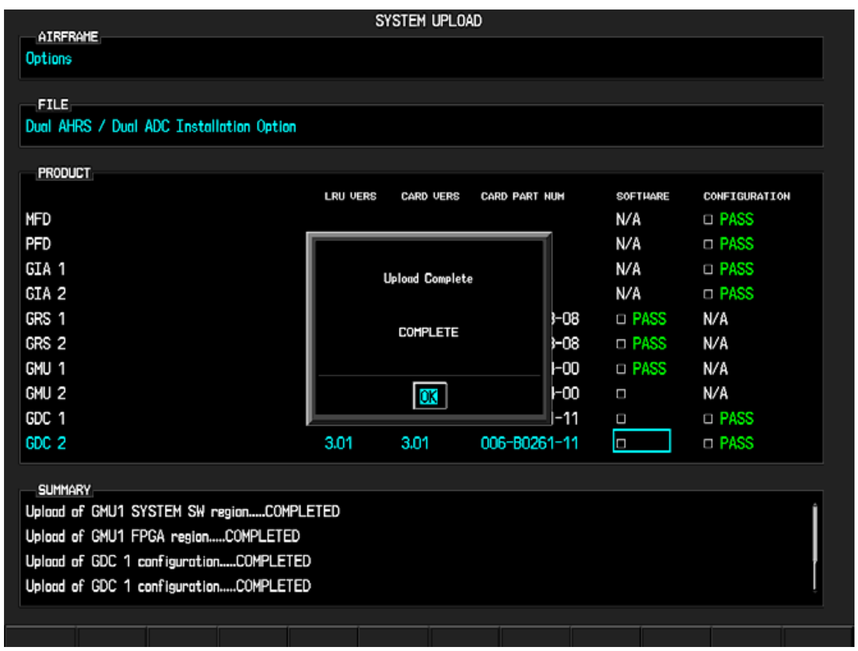


Figure 10-4. Dual AHRS Option

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U. TAWS Unlock Option

Once an unlock SD card is utilized for a particular installation, that card becomes locked with the system ID for that aircraft. The unlock cards must be retained for that aircraft should there be a need to unlock the feature again in the field. Perform this procedure only if the aircraft is equipped with the Garmin TAWS option.

1. Remove power from the PFD and MFD by opening the PFD and MFD circuit breakers.
2. *A special TAWS unlock card is required to enable TAWS*. Refer to the appropriate Cirrus drawing for the correct part number. Insert this card in the upper slot of the PFD.
3. While holding the ENT key on the PFD and MFD, restore power to the displays.
4. When the words 'INITIALIZING SYSTEM' appear in the upper left corner of both displays, release the ENT keys.
5. On the PFD, go to the System Upload page using the FMS knob.
6. Activate the cursor. Use the small FMS knob to select CONFIGURATION FILES in the AIRFRAME field and press the ENT key.
7. Highlight the FILE field. Use the small FMS knob to select the 'Enable TAWS' option and press the ENT key. Once the option is selected, the configuration files in the PRODUCT field will be displayed. All files should be checked. If not, press the CHK ALL softkey.
8. Press the LOAD softkey.
9. Monitor the status of the upload. When the upload is finished, press the ENT key to acknowledge the upload complete confirmation.
10. View the SUMMARY field and ensure that the item is 'COMPLETE'.
11. De-activate the cursor.
12. Power down the system and remove the TAWS Enable card from the PFD.

V. Terrain-Synthetic Vision (SVS) Unlock Option

Once an unlock SD card is utilized for a particular installation that card becomes locked with the system ID for that aircraft. The unlock cards must be retained for that aircraft should there be a need to unlock the feature again in the field. Perform this procedure only if the aircraft is to be equipped with the Garmin Terrain-SVS option.

1. Remove power from the PFD and MFD by opening the PFD and MFD circuit breakers.
2. A special Synthetic Vision unlock card is required to enable SVS. Refer to the appropriate Cirrus drawing for the correct part number. Insert this card in the top slot of the PFD.
3. While holding the ENT key on the PFD and MFD, restore power to the displays.
4. When the words ‘INITIALIZING SYSTEM’ appear in the upper left corner of both displays, release the ENT keys.
5. On the PFD, go to the System Upload page using the FMS knob.
6. Activate the cursor. Use the small FMS knob to select CONFIGURATION FILES in the AIRFRAME field and press the ENT key.
7. Highlight the FILE field. Use the small FMS knob to select the ‘Enable Synthetic Vision’ option and press the ENT key. Once the option is selected, the configuration files in the PRODUCT field will be displayed. All files should be checked. If not, press the CHK ALL softkey.
8. Press the LOAD softkey.
9. Monitor the status of the upload. When the upload is finished, press the ENT key to acknowledge the upload complete confirmation.
10. View the SUMMARY field and ensure that the item is ‘COMPLETE’.
11. De-activate the cursor.
12. Power down the system and remove the Synthetic Vision Enable card from the PFD.

W. ChartView Unlock Option

NOTE

ChartView databases are subscription-based and are to be procured by the aircraft owner directly from Jeppesen. This procedure is only required if the ChartView option is purchased by the customer.

NOTE

Once an unlock SD card is utilized for a particular installation that card becomes locked with the system ID for that aircraft. The unlock cards must be retained for that aircraft should there be a need to unlock the feature again in the field.

1. Remove power from the PFD and MFD by opening the PFD and MFD circuit breakers.
2. A special ChartView unlock card is required to activate this feature. Refer to the appropriate Cirrus drawing for the correct part number. Insert this card in the upper slot of the PFD.
3. While holding the ENT key on the PFD and MFD, restore power to both displays by closing the PFD and MFD circuit breakers.
4. When the words 'INITIALIZING SYSTEM' appear in the upper left corner of the displays, release the ENT key.
5. On the PFD, go to the System Upload page using the FMS knob.
6. Activate the cursor. Use the small FMS knob to select CONFIGURATION FILES in the AIRFRAME field and press the ENT key.
7. Highlight the FILE field. Use the small FMS knob to select the "Enable ChartView" option and press the ENT key. Once the option is selected the configuration files in the PRODUCT field will be displayed. All files should be checked. If not, press the CHK ALL softkey.
8. Press the LOAD softkey.
9. Monitor the status of the upload. When the upload is finished, press the ENT key to acknowledge the upload complete confirmation.
10. View the SUMMARY field and ensure that the item is 'COMPLETE'.
11. De-activate the cursor.
12. Power down the system and remove the ChartView Enable card from the PFD.

10.5 SOFTWARE LOAD CONFIRMATION

Figure 10-5. System Status Page

1. Select the System Status page using the FMS knob. Activate the cursor and toggle to the LRU window.
2. Highlight each of the following item in the LRU window, and verify that the software part number and version matches the information in the appropriate Cirrus drawing (use the following table).
3. De-activate the cursor.

NOTE

If any software version and/or part number does not match those specified by the General Arrangement Drawing, or if the software is not successfully loaded, DO NOT continue with upload procedures. Troubleshoot and resolve the issue before continuing.

LRU	SW VER OK	LRU	SW VER OK
GCU	____________	GMU1	____________
GDC1	____________	GMU1 FPGA	____________
GDC1 FPGA	____________	GMU2**	____________
GDC2***	____________	GMU2 FPGA**	____________
GDC2 FPGA***	____________	GRS1	____________
GEA1	____________	GRS1 FPGA	____________
GFC CERT GIA1*	____________	GRS2**	____________
GFC CERT GIA2*	____________	GRS2 FPGA**	____________
GFC CERT P C*	____________	GSA PTCH CTL	____________
GFC CERT P M*	____________	GSA PTCH MON	____________
GFC CERT PT*	____________	GSA ROLL CTL	____________
GFC CERT R C*	____________	GSA ROLL MON	____________
GFC CERT R M*	____________	GTA PTCH TRM	____________
GIA1	____________	GTX1	____________
GIA1 AUDIO	____________	MFD1	____________
GIA2	____________	MFD1 FPGA	____________
GIA2 AUDIO	____________	PFD1	____________
GMA1	____________	PFD1 FPGA	____________

*GFC 700 equipped aircraft only.

**Dual GRS equipped aircraft only.

***Dual GDC equipped aircraft only.

10.6 Aircraft Registration Number Entry (GTX33 Option Only)

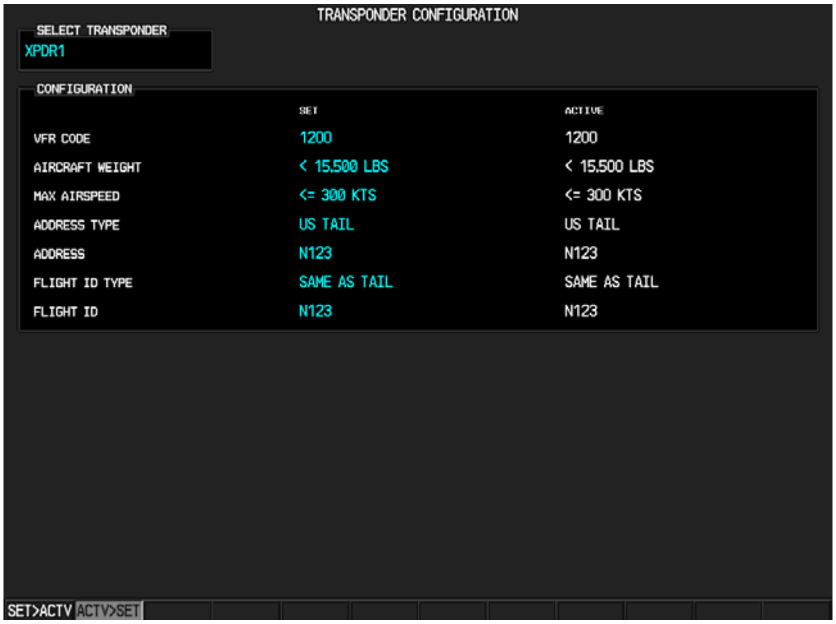
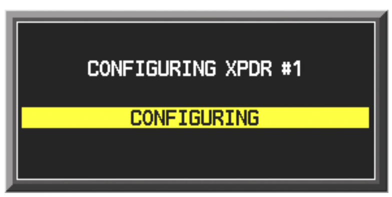
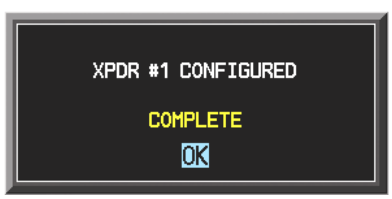


Figure 10-6. XPDR1 Option

1. Select the GTX page group on the PFD then select the TRANSPONDER CONFIGURATION page.
2. Make sure the ‘ADDRESS TYPE’ is ‘US TAIL’ under the ‘SET’ and ‘ACTIVE’ columns.
3. Activate the cursor and highlight the ‘ADDRESS’ field. Use the small/large FMS knobs to enter the aircraft registration number. Once the correct registration number is entered, press the ENT key. The transponder is configuring:



4. The transponder then alerts the technician of complete configuration:



5. Press the ENT key on the PFD.
6. At this point, the technician may enter a Flight ID Type and Flight ID number if desired. The system defaults to ‘SAME AS TAIL’. After transponder configuration is complete, deactivate the cursor.

10.7 Navigation Databases

Features

Perspective systems with GDU software version 10.0 and above may utilize the following database features:

Dual Navigation Database Support: the GDU is able to store an upcoming navigation database on the bottom SD card so that the system can automatically load it to replace the active database when the new database becomes effective.

Automatic Database Synchronization: the Perspective system is able to automatically check all databases stored on the bottom SD cards in each GDU and transfer the most recent cycle of each database to any cards that do not have the most recent cycle. This gives users the option of downloading database updates to the database card from only one GDU and letting the system synchronize the updates to the cards on the other GDU(s).

See the Garmin Pilot's Guide for complete details regarding these features.

NOTE

Use only blank SD cards to load the Navigation Database into the GDUs. Do not copy the navigation database (not including Chartview) onto 010-00330-42 (or -43) supplemental data cards to load into the GDUs. Doing so may corrupt the supplemental database cards making them unusable. Replacing corrupt cards is not covered under warranty.

The navigation database is updated on a 28-day cycle and is provided directly from Jeppesen. The navigation database may be installed from the Jeppesen supplied SD data card. After the navigation database is installed, the card may be removed after loading the update to each GDU.

NOTE

Do not load the Navigation Database to a Supplemental Database Card to load into the displays. SD cards used for loading the navigation database are formatted differently (FAT) than the Supplemental Database cards (FAT32). This may corrupt the Supplemental Database Card rendering it unusable. Replacing corrupted cards are not covered under warranty.

To Upload the Navigation Database:

NOTE

The following steps are used by both traditional loading of the NAV DB and by the dual NAV DB (to load the backup DB; GDU 10.0). If the synch feature is also enabled, this only needs to be performed on one GDU. Otherwise, it needs to be performed on all GDUs.

1. With the Perspective system off, insert the navigation database SD Card into the top card slot of PFD2.
2. Turn the Perspective system on. The following prompt is displayed in the upper left corner of PFD2:
3. Press the ENT key to confirm the database update. The following screen is displayed:

4. After the update completes, the MFD starts in normal mode. Remove the navigation database update SD Card from the MFD.
5. Power the Perspective system down.
6. Repeat steps 1 through 4 for the PFD. On the PFD, pressing the ENT key will not work. Press the YES Softkey.
7. Confirm that the correct update cycle and version is loaded during startup of the MFD.

10.8 Aviation Database Loading (Pre GDU 10.0)

NOTE

Retain the Jepp SD cards for future updates.

1. Insert a database card containing the Jeppesen aviation database (card & database supplied by Jeppesen) into the top slot of the PFD.
2. Apply power to the PFD. The following prompt is displayed in the upper left corner of the PFD:

```
DO YOU WANT TO UPDATE THE AVIATION DATABASE?
PRESS CLR FOR NO AND ENT FOR YES
YOU HAVE 30 SECONDS BEFORE NO IS RETURNED
```

3. Press the ENT key to confirm the database update. The following prompt is displayed:

```
DO YOU WANT TO UPDATE THE AVIATION DATABASE?
PRESS CLR FOR NO AND ENT FOR YES
YOU HAVE 30 SECONDS BEFORE NO IS RETURNED
UPDATING AVIATION DATABASE
.
UPDATED 1 FILES SUCCESSFULLY!
```

4. After the update completes the PFD starts in normal mode. Remove the aviation database update card from the PFD.
5. Repeat steps 2 through 4 for the MFD. The MFD and PFD aviation databases are now updated.
6. Confirm that the correct update cycle and version is loaded at the power-up page of the MFD.
7. Remove the aviation database update card from the MFD.

10.9 Other Perspective Databases

Terrain/Obstacle/SafeTaxi®/FliteCharts®/Expanded Basemap Database Cards

There is no unlock card required for Garmin FliteCharts®. A single cycle of Garmin FliteCharts® is loaded on the database cards when they are manufactured at Garmin. Additional FliteChart® database updates are obtained directly from Garmin's web site and are updated on a periodic basis. The system automatically detects the FliteChart® databases and activates the display feature. Once Jepp ChartView is unlocked the system will make use of the Jepp data and will not display FliteChart® data or version.

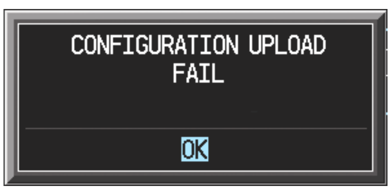
1. Remove power from the PFD and MFD using the respectively labeled breakers.
2. Remove the Garmin SR20/SR22/SR22 Turbo Normalized software loader card from the PFD.
3. Insert two Terrain/Obstacle/SafeTaxi®/FliteChart® database cards into the bottom slots of the MFD and PFD, respectively. Refer to the appropriate Cirrus drawing for correct database card part numbers.
4. Continue to the aviation database loading procedure.

Jeppesen ChartView, Cirrus Startup Screens, and Cirrus Checklist

If the Perspective™ System is to be equipped with the Jeppesen ChartView display option, the appropriate ChartView database must be loaded onto the Terrain/Obstacle/SafeTaxi/FliteChart database card (bottom -43 card) installed in the MFD along with any Cirrus startup screen images and Cirrus checklist files. ChartView database subscription services must be procured directly from Jeppesen and are usually sourced by the aircraft owner. Further, the ChartView feature must be 'unlocked' before the system can use the databases.

1. Obtain ChartView data and copy onto an SD card. Refer to Cirrus drawing for SD card requirement.
2. Obtain Cirrus startup screen images and checklist files and copy onto the same SD card. Refer to Cirrus drawing for image location.
3. Insert the card into the bottom slot on the MFD.

10.10 SOFTWARE/CONFIGURATION TROUBLESHOOTING

Problem	Solutions
MFD or PFD displays do not power up	• Ensure power is present at display backshell connector. • Replace display.
Software file load fails: 	• Ensure that LRU is reporting data on System Status page (LRU is 'ONLINE'). Check data path wiring as needed. • Retry software file load or try using a different card. Ensure that the MFD is not touched during the loading process. • Ensure that LRU part number is compatible with software version and Card Loader. Refer to the General Arrangement Drawing and to Section TBD of this document. • Restart MFD & PFD in Configuration Mode and retry software file load or try using a different card. • Replace LRU.
Configuration file load fails: 	• Ensure that LRU is reporting data on System Status page (LRU is 'ONLINE'). Check data path wiring as needed. • Retry configuration file load or try using a different card. Ensure that the MFD is not touched during the loading process. • Ensure that LRU part number is compatible with Card Loader. Refer to the General Arrangement Drawing and to Section 10.5 of this document. • Restart MFD & PFD in Configuration Mode and retry software file load or try using a different card. • Replace LRU.

GIA1 and/or GIA2 to 'LRU' data path not working	• Ensure GIA1 and GIA2 are configured correctly. • Check wiring, connectors & pins as needed.
Software File Mismatch Alert appears in lower right corner of PFD when started in normal mode: 	• Ensure that proper software file part number and version were loaded to LRU. Refer to the General Arrangement Drawing. • Check and ensure that correct Card Loader was used during load process. Refer to the General Arrangement Drawing. • Reload software to LRU.
Optional Equipment does not work.	• Load optional config file to enable the system to interface with the optional unit. • If optional equipment still does not operate, reference optional equipment documentation for further troubleshooting.
"SYN VIS" softkey does not appear on PFD softkey tier.	• Verify that the PFD and MFD software versions are shown to be 9.01 or above by checking the AUX – System Status Page on the MFD. • If version 9.01 or above software is installed in the MFD and PFD, reactivate the SVS/Pathways feature.
3D terrain presentation does not appear on PFD.	• Verify that P/N 010-00442-43 terrain data cards are installed in the lower slot of the PFD and MFD. • Verify that the alert messages are not displayed on the PFD Alerts Window. • Verify that the system AHRS, and heading data are valid on the PFD. • Verify that a valid GPS 3D position solution is being received. • If a terrain database update has just been performed, allow the system time to initialize and verify the data. When the databases have been verified, the current database cycle and version are reported on the MFD AUX – System Status page.

The following table provides SVS specific alert messages which may appear in the Alerts Window on the PFD (press the ALERTS softkey on the PFD to view the Alerts Window):

SVS-Related Alert Messages

Failure Message	Cause	Solution
SVS – SVS DISABLED: Out of available terrain region.	SVS is disabled because the aircraft exceeded the boundaries of the loaded terrain database.	Ensure that operations are within the required geographic area.
SVS – SVS DISABLED: Terrain DB resolution too low	SVS is disabled because a 9 Arc-Second or better database is not currently loaded.	Ensure the P/N 010-00330-43 Terrain Cards are installed in the lower slot of each display. If terrain data has been recently updated, ensure that the correct 9 Arc-Second databases were used.

Blank Page

APPENDIX

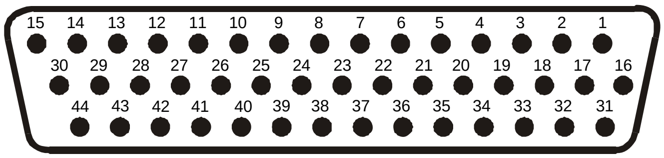
CONNECTOR PIN ASSIGNMENTS

The tables in this section provide connector pinout information for the system.

A.1 GIA 63W

P601 (COM)

View of J601 connector looking at unit

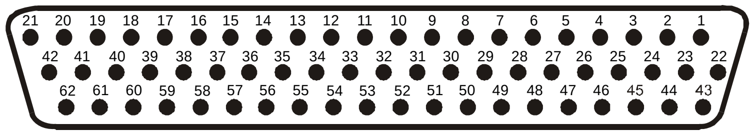


Pin	Pin Name	I/O
1	UNSQUELCHED AUDIO TEST	--
2	RESERVED	--
3	RESERVED	--
4	COM MIC KEY*	In
5	INTERCOM MIC IN HI	In
6	INTERCOM MIC IN LO (GROUND)	--
7	COM MIC AUDIO IN HI	In
8	COM MIC AUDIO IN LO (GROUND)	--
9	COM 500Ω AUDIO OUT HI	Out
10	COM 500Ω AUDIO OUT LO (GROUND)	--
11	TRANSMIT INTERLOCK*	In
12	COM REMOTE TRANSFER*	In
13	COM DIGITAL AUDIO OUT	Out
14	COM MIC DIGITAL AUDIO IN	In
15	SIGNAL GROUND	--
16	COM REMOTE POWER OFF	In
17	AIRCRAFT POWER 1	In
18	SPARE	--
19	AIRCRAFT POWER 1	In
20	SPARE	--
21	AIRCRAFT POWER 1	In
22	SPARE	--
23	AIRCRAFT POWER 2	In
24	SPARE	--
25	AIRCRAFT POWER 2	In
26	SPARE	--
27	AIRCRAFT POWER 2	In
28	RESERVED	--
29	RESERVED	--
30	POWER GROUND	--

31	POWER GROUND	--
32	COM RS-232 OUT 1	Out
33	COM RS-232 IN 1	In
34	COM REMOTE TUNE ENABLE*	In
35	COM AUDIO IN HI	In
36	COM AUDIO IN LO (GROUND)	--
37	VOR/LOC AUDIO IN HI	In
38	VOR/LOC AUDIO IN LO (GROUND)	--
39	AUX AUDIO IN HI	In
40	AUX AUDIO IN LO (GROUND)	--
41	SUMMED 4Ω AUDIO OUT HI	Out
42	SUMMED 4Ω AUDIO OUT LO (GROUND)	--
43	POWER GROUND	--
44	POWER GROUND	--

A.2 P602 (VOR/ILS)

View of J602 connector looking at unit

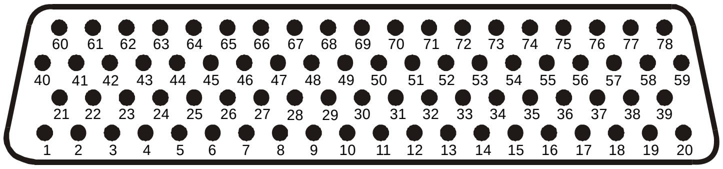


Pin	Pin Name	I/O
1	VOR/LOC +TO	Out
2	VOR/LOC +FROM (VOR/LOC COMMON)	--
3	VOR/LOC +FLAG	Out
4	VOR/LOC -FLAG (VOR/LOC COMMON)	--
5	VOR/LOC +LEFT	Out
6	VOR/LOC +RIGHT (VOR/LOC COMMON)	--
7	RESERVED (VOR/LOC IF AGC)	--
8	VOR/LOC COMPOSITE OUT	Out
9	VOR OBS ROTOR C	Out
10	VOR OBS ROTOR H (GROUND)	--
11	VOR OBS STATOR E (VOR/LOC COMMON)	--
12	VOR OBS STATOR F	In
13	VOR OBS STATOR D	In
14	VOR OBS STATOR G (VOR/LOC COMMON)	--
15	VOR/LOC SUPERFLAG	Out
16	VOR/LOC 500Ω AUDIO OUT HI	Out
17	VOR/LOC 500Ω AUDIO OUT LO	--
18	KING SERIAL DME CLOCK	Out
19	KING SERIAL DME DATA	Out
20	KING SERIAL RNAV REQUEST	In
21	KING SERIAL RNAV* MODE	In
22	SIGNAL GROUND	--
23	VOR/ILS ARINC 429 OUT B	Out
24	VOR/ILS ARINC 429 OUT A	Out
25	VOR OBI CLOCK	Out
26	VOR OBI SYNC	Out
27	VOR OBI DATA	Out
28	VOR/ILS REMOTE TRANSFER*	In
29	ILS ENERGIZE*	Out
30	RESERVED	--
31	RESERVED	--
32	GLIDESLOPE +FLAG	Out
33	PARALLEL DME 1 MHZ-D	Out
34	GLIDESLOPE +UP	Out
35	VOR/ILS ARINC 429 IN B	In
36	VOR/ILS ARINC 429 IN A	In
37	PARALLEL DME 100 KHZ-A	Out

38	GLIDESLOPE SUPERFLAG	Out
39	PARALLEL DME 100 KHZ-B	Out
40	PARALLEL DME 100 KHZ-C	Out
41	DME COMMON	In
42	PARALLEL DME 100 KHZ-D	Out
43	PARALLEL DME 50 KHZ	Out
44	SPARE	--
45	PARALLEL DME 1 MHZ-A	Out
46	PARALLEL DME 1 MHZ-B	Out
47	PARALLEL DME 1 MHZ-C	Out
48	RESERVED	--
49	SIGNAL GROUND	--
50	RESERVED	--
51	SPARE	--
52	SPARE	--
53	GLIDESLOPE –FLAG (GLIDESLOPE COMMON)	--
54	PARALLEL DME 100 KHZ-E	Out
55	GLIDESLOPE +DOWN (GLIDESLOPE COMMON)	--
56	PARALLEL DME 1 MHZ-E	Out
57	RESERVED	--
58	SPARE	--
59	VOR/LOC DIGITAL AUDIO OUT	Out
60	SIGNAL GROUND	--
61	POWER GROUND	--
62	POWER GROUND	--

A.3 P603 (Main Serial)

View of J603 connector looking at unit

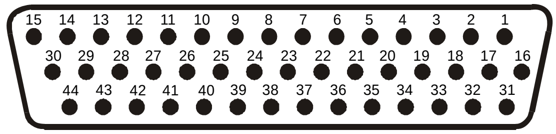


Pin	Pin Name	I/O
1	RESERVED	--
2	ETHERNET OUT A	Out
3	ETHERNET OUT B	Out
4	RS-485 4 A (SERVO)	I/O
5	RS-485 4 A (SERVO)	I/O
6	RS-485 4 B (SERVO)	I/O
7	RS-485 4 B (SERVO)	I/O
8	MAIN ARINC 429 IN 3 A	In
9	MAIN ARINC 429 IN 3 B	In
10	MAIN ARINC 429 IN 4 A	In
11	MAIN ARINC 429 IN 4 B	In
12	MAIN ARINC 429 IN 5 A	In
13	MAIN ARINC 429 IN 5 B	In
14	MAIN ARINC 429 IN 6 A	In
15	MAIN ARINC 429 IN 6 B	In
16	MAIN ARINC 429 IN 7 A	In
17	MAIN ARINC 429 IN 7 B	In
18	MAIN ARINC 429 IN 8 A	In
19	MAIN ARINC 429 IN 8 B	In
20	CAN BUS 1 HI	I/O
21	RESERVED	--
22	CAN BUS 1 LO	I/O
23	RS-485 1 A	I/O
24	RS-485 1 B	I/O
25	RS-485 2 A	I/O
26	RS-485 2 B	I/O
27	RS-485 3 A/RS-422 IN A	I/O
28	RS-485 3 B/RS-422 IN B	I/O
29	MAIN ARINC 429 IN 1 A	In
30	CAN BUS 2 LO	I/O
31	MAIN ARINC 429 IN 1 B	In
32	CAN BUS 2 HI	I/O
33	MAIN ARINC 429 IN 2 A	In
34	CAN BUS 1 TERMINATION	--
35	MAIN ARINC 429 IN 2 B	In
36	RS-485 5 A/RS-422 OUT A	I/O

Connector P603, continued		
Pin	**Pin Name**	**I/O**
37	RS-485 5 B/RS-422 OUT B	I/O
38	RESERVED	--
39	CAN BUS 2 TERMINATION	--
40	RESERVED	--
41	MAIN RS-232 IN 1	In
42	SIGNAL GROUND	--
43	MAIN RS-232 OUT 1	Out
44	MAIN RS-232 IN 2	In
45	SIGNAL GROUND	--
46	MAIN RS-232 OUT 2	Out
47	MAIN RS-232 IN 3	In
48	SIGNAL GROUND	--
49	MAIN RS-232 OUT 3	Out
50	MAIN RS-232 IN 4	In
51	SIGNAL GROUND	--
52	MAIN RS-232 OUT 4	Out
53	MAIN RS-232 IN 5	In
54	SIGNAL GROUND	--
55	MAIN RS-232 OUT 5	Out
56	MAIN RS-232 IN 6	In
57	SIGNAL GROUND	--
58	MAIN RS-232 OUT 6	Out
59	MAIN RS-232 IN 7	In
60	RESERVED	--
61	SIGNAL GROUND	--
62	MAIN RS-232 OUT 7	Out
63	MAIN RS-232 IN 8	In
64	SIGNAL GROUND	--
65	MAIN RS-232 OUT 8	Out
66	RESERVED	--
67	GPS PPS OUT	Out
68	RESERVED	--
69	VOICE ALERT DIGITAL AUDIO OUT	Out
70	MAIN ARINC 429 OUT 1 B	Out
71	MAIN ARINC 429 OUT 1 A	Out
72	MAIN ARINC 429 OUT 2 B	Out
73	MAIN ARINC 429 OUT 2 A	Out
74	MAIN ARINC 429 OUT 3 B	Out
75	MAIN ARINC 429 OUT 3 A	Out
76	ETHERNET IN A	In
77	ETHERNET IN B	In
78	RESERVED	--

A.4 P604 (MAIN DISCRETE)

View of J604 connector looking at unit

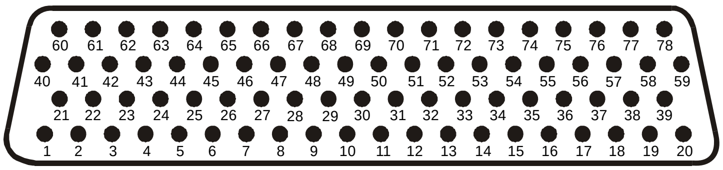


Pin	Pin Name	I/O
1	ANNUNCIATE* 22	Out
2	VOICE ALERT 500Ω AUDIO OUT HI	Out
3	VOICE ALERT 500Ω AUDIO OUT LO (GROUND)	--
4	DISCRETE IN 13	In
5	DISCRETE IN 14	In
6	ANNUNCIATE* 1	Out
7	DISCRETE IN* 1	In
8	DISCRETE IN* 2	In
9	DISCRETE IN* 3	In
10	DISCRETE IN 15	In
11	AP DISCONNECT IN	In
12	DISCRETE IN* 4	In
13	DISCRETE IN* 5	In
14	DISCRETE IN* 6	In
15	DISCRETE IN 16	In
16	DISCRETE IN 17	In
17	DISCRETE IN* 7	In
18	DISCRETE IN* 8	In
19	DISCRETE IN* 9	In
20	DISCRETE IN* 10	In
21	DISCRETE IN* 11	In
22	GIA SYSTEM ID PROGRAM* 1	In
23	GIA SYSTEM ID PROGRAM* 2	In
24	DISCRETE IN* 12	In
25	ANNUNCIATE* 2	Out
26	ANNUNCIATE* 3	Out
27	ANNUNCIATE* 4	Out
28	ANNUNCIATE* 5	Out
29	ANNUNCIATE* 6	Out
30	ANNUNCIATE* 7	Out
31	ANNUNCIATE* 8	Out
32	ANNUNCIATE* 9	Out
33	ANNUNCIATE* 10	Out
34	ANNUNCIATE* 11	Out
35	ANNUNCIATE* 12	Out
36	ANNUNCIATE* 13	Out

37	ANNUNCIATE* 14	Out
38	ANNUNCIATE* 15	Out
39	ANNUNCIATE* 16	Out
40	ANNUNCIATE* 17	Out
41	ANNUNCIATE* 18	Out
42	ANNUNCIATE* 19	Out
43	ANNUNCIATE* 20	Out
44	ANNUNCIATE* 21	Out

A.5 P605 (I/O #1)

View of J605 connector looking at unit

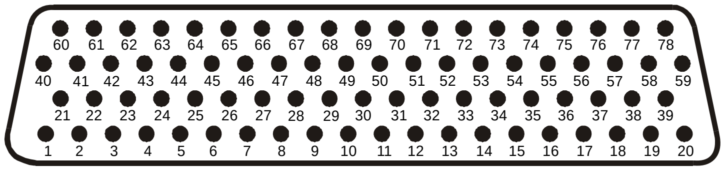


Pin	Pin Name	I/O
1	RADAR ALTIMETER DC HI	In
2	RADAR ALTIMETER DC LO	In
3	DISCRETE IN 18A	In
4	SPARE	--
5	SPARE	--
6	SPARE	--
7	SPARE	--
8	FLIGHT DIRECTOR PITCH +UP	In
9	FLIGHT DIRECTOR PITCH +DOWN	In
10	FLIGHT DIRECTOR ROLL +RIGHT	In
11	FLIGHT DIRECTOR ROLL +LEFT	In
12	DISCRETE IN 19A	In
13	POTENTIOMETER SIGNAL IN	In
14	POTENTIOMETER REF IN HI	In
15	POTENTIOMETER REF IN LO	In
16	DISCRETE IN 20A	In
17	MAIN LATERAL DEVIATION +LEFT	Out
18	MAIN LATERAL DEVIATION +RIGHT (MAIN COMMON)	Out
19	MAIN LATERAL +FLAG	Out
20	MAIN LATERAL –FLAG (MAIN COMMON)	Out
21	SPARE	--
22	SPARE	--
23	MAIN VERTICAL DEVIATION +UP	Out
24	MAIN VERTICAL DEVIATION +DOWN (MAIN COMMON)	Out
25	MAIN VERTICAL +FLAG	Out
26	MAIN VERTICAL –FLAG (MAIN COMMON)	Out
27	SPARE	--
28	SPARE	--
29	AIRCRAFT POWER 1	In
30	POTENTIOMETER SIGNAL OUT	Out
31	AIRCRAFT POWER 1	In
32	POTENTIOMETER REF OUT HI	Out
33	AIRCRAFT POWER 2	In
34	POTENTIOMETER REF OUT LO (GROUND)	Out
35	AIRCRAFT POWER 2	In
36	GIA REMOTE POWER OFF	In

Connector P605, continued		
Pin	**Pin Name**	**I/O**
37	DISCRETE IN* 1A	In
38	DISCRETE IN* 2A	In
39	DISCRETE IN* 3A	In
40	DISCRETE IN* 4A	In
41	DISCRETE IN* 5A	In
42	DISCRETE IN* 6A	In
43	DISCRETE IN* 7A	In
44	DISCRETE IN* 8A	In
45	DISCRETE IN* 9A	In
46	DISCRETE IN* 10A	In
47	DISCRETE OUT* 1A	Out
48	SIGNAL GROUND	--
49	DISCRETE IN* 11A	In
50	DISCRETE IN 21A	In
51	DISCRETE IN 22A	In
52	DISCRETE IN* 12A	In
53	DISCRETE IN* 13A	In
54	DISCRETE IN* 14A	In
55	DISCRETE IN* 15A	In
56	OUTER MARKER LAMP IN	In
57	MIDDLE MARKER LAMP IN	In
58	AIRWAY/INNER MARKER LAMP IN	In
59	DISCRETE IN* 16A	In
60	DISCRETE IN 23A	In
61	SIGNAL GROUND	--
62	MAIN LATERAL SUPERFLAG	Out
63	MAIN VERTICAL SUPERFLAG	Out
64	SUPERFLAG 4A	Out
65	SPARE	--
66	SPARE	--
67	SUPERFLAG 1A	Out
68	DISCRETE OUT* 2A	Out
69	DISCRETE OUT* 3A	Out
70	DISCRETE OUT* 4A	Out
71	ANNUNCIATE* 1A	Out
72	ANNUNCIATE* 2A	Out
73	DISCRETE IN* 17A	In
74	DISCRETE IN 24A	In
75	SUPERFLAG 2A	Out
76	POWER GROUND	--
77	SUPERFLAG 3A	Out
78	POWER GROUND	--

A.6 P606 (I/O #2)

View of J606 connector looking at unit

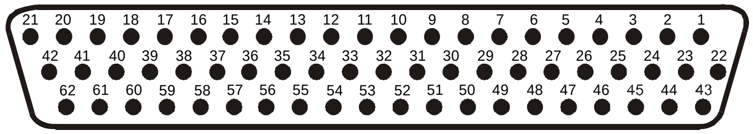


Pin	Pin Name	I/O
1	26 VAC VERTICAL GYRO REF HI	In
2	26 VAC VERTICAL GYRO REF LO	In
3	26 VAC ADF REF HI	In
4	26 VAC ADF REF LO	In
5	26 VAC AFCS REF HI	In
6	26 VAC AFCS REF LO	In
7	DIRECTIONAL GYRO MOTOR A	In
8	DIRECTIONAL GYRO MOTOR B	In
9	SIGNAL GROUND	--
10	ADF X/COS	In
11	ADF Y/SIN	In
12	ADF Z (GROUND)	In
13	SIGNAL GROUND	--
14	HEADING X	In
15	HEADING Y	In
16	HEADING Z (GROUND)	In
17	SIGNAL GROUND	--
18	PITCH ATTITUDE X	In
19	PITCH ATTITUDE Y	In
20	PITCH ATTITUDE Z (GROUND)	In
21	ROLL ATTITUDE X	In
22	ROLL ATTITUDE Y	In
23	ROLL ATTITUDE Z (GROUND)	In
24	SIGNAL GROUND	--
25	SPARE	--
26	SPARE	--
27	SPARE	--
28	SPARE	--
29	RESERVED	--
30	SIGNAL GROUND	--
31	RESERVED	--
32	ADF DC REF IN	In
33	RESERVED	--
34	ANALOG ROLL STEERING HI	Out
35	RESERVED	--
36	ANALOG ROLL STEERING LO (GROUND)	Out

Connector P606, continued		
Pin	**Pin Name**	**I/O**
37	HEADING BOOTSTRAP OUT X	Out
38	HEADING BOOTSTRAP OUT Y	Out
39	HEADING BOOTSTRAP OUT Z (GROUND)	Out
40	AC ROLL ATTITUDE OUT HI	Out
41	AC ROLL ATTITUDE OUT LO (GROUND)	Out
42	AC PITCH ATTITUDE OUT HI	Out
43	AC PITCH ATTITUDE OUT LO (GROUND)	Out
44	YAW RATE +RIGHT	Out
45	YAW RATE +LEFT (GROUND)	Out
46	HEADING DATUM HI	Out
47	HEADING DATUM LO (GROUND)	Out
48	COURSE DATUM HI	Out
49	COURSE DATUM LO (GROUND)	Out
50	SIGNAL GROUND	--
51	26 VAC DIRECTIONAL GYRO REF HI	In
52	26 VAC DIRECTIONAL GYRO REF LO	In
53	REMOTE ANNUNCIATE CLOCK	In
54	REMOTE ANNUNCIATE DATA	In
55	REMOTE ANNUNCIATE SYNC	In
56	MAIN OBI CLOCK	Out
57	MAIN OBI DATA	Out
58	MAIN OBI SYNC	Out
59	MAIN KING SERIAL DME DATA	I/O
60	MAIN KING SERIAL DME CLOCK	Out
61	MAIN KING SERIAL DME HOLD* OUT	Out
62	MAIN KING SERIAL DME REQUEST	I/O
63	MAIN KING SERIAL DME ON* OUT	Out
64	MAIN KING SERIAL RNAV REQUEST	In
65	RESERVED	--
66	RESERVED	--
67	DISCRETE OUT* 1B	Out
68	DISCRETE OUT* 2B	Out
69	DISCRETE OUT* 3B	Out
70	DISCRETE OUT* 4B	Out
71	DISCRETE OUT* 5B	Out
72	DISCRETE OUT* 6B	Out
73	DISCRETE OUT* 7B	Out
74	DISCRETE OUT* 8B	Out
75	DISCRETE OUT* 9B	Out
76	RESERVED	--
77	DISCRETE OUT* 10B	Out
78	RESERVED	--

A.7 P12001 Connector (GDU 1240A)

View of J12001 connector from back of unit



Pin	Pin Name	I/O
1	CONFIG MODULE GROUND	Out
2	ETHERNET OUT 1 A	Out
3	ETHERNET OUT 1 B	Out
4	ETHERNET IN 1 A	In
5	ETHERNET IN 1 B	In
6	ETHERNET OUT 2 A	Out
7	ETHERNET OUT 2 B	Out
8	ETHERNET IN 2 A	In
9	ETHERNET IN 2 B	In
10	ETHERNET OUT 3 A	Out
11	ETHERNET OUT 3 B	Out
12	ETHERNET IN 3 A	In
13	ETHERNET IN 3 B	In
14	FAN MONITOR VALID*	In
15	REVERSIONARY MODE SELECT 2	In
16	ARINC 429 IN 2 A	In
17	ARINC 429 IN 2 B	In
18	ARINC 429 IN 1 A	In
19	ARINC 429 IN 1 B	In
20	LIGHTING BUS 2 HI	In
21	LIGHTING BUS 2 LO	In
22	CONFIG MODULE DATA	I/O
23	CONFIG MODULE POWER OUT	Out
24	RESERVED	--
25	RESERVED	--
26	SIGNAL GROUND	--
27	POWER GROUND	--
28	COMPOSITE VIDEO IN 1 HI	In
29	POWER GROUND	--
30	SIGNAL GROUND	--
31	SIGNAL GROUND	--
32	SIGNAL GROUND	--
33	POWER GROUND	--
34	SIGNAL GROUND	--

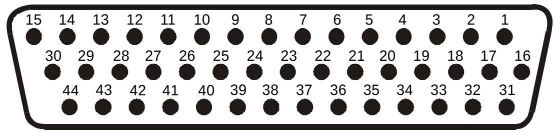
Connector P12001, continued		
Pin	**Pin Name**	**I/O**
35	AIRCRAFT POWER 1	In
36	SIGNAL GROUND	--
37	AIRCRAFT POWER 1	In
38	SIGNAL GROUND	--
39	AIRCRAFT POWER 2	In
40	SIGNAL GROUND	--
41	AIRCRAFT POWER 2	In
42	SIGNAL GROUND	--
43	CONFIG MODULE CLOCK	Out
44	RS-232 OUT 1	Out
45	RS-232 IN 1	In
46	RS-232 OUT 2	Out
47	RS-232 IN 2	In
48	ETHERNET OUT 4A	Out
49	ETHERNET OUT 4 B	Out
50	ETHERNET IN 4 A	In
51	ETHERNET IN 4 B	In
52	UNIT 1 REMOTE POWER OFF	Out
53	RESERVED	--
54	DEMO MODE SELECT*	In
55	CDU SYSTEM ID PROGRAM* 1	In
56	CDU SYSTEM ID PROGRAM* 2	In
57	CDU SYSTEM ID PROGRAM* 3	In
58	REVERSIONARY MODE SELECT 1	In
59	LIGHTING BUS HI	In
60	LIGHTING BUS LO	In
61	RESERVED	--
62	COMPOSITE VIDEO IN 2 HI	In

* Indicates Active Low

A.8 GRS 77

P771

View of J771 connector looking at unit



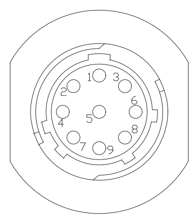
Pin	Pin Name	I/O
1	CONFIG MODULE GROUND	--
2	AHRS SYSTEM ID PROGRAM* 1	In
3	AHRS SYSTEM ID PROGRAM* 2	In
4	RESERVED	--
5	SPARE	--
6	GPS 2 RS-232 IN	In
7	RESERVED	--
8	SPARE RS-232 IN 1	In
9	MAGNETOMETER POWER OUT	Out
10	MAGNETOMETER RS-232 OUT	Out
11	GPS 1 RS-232 IN	In
12	ARINC 429 OUT 3 A	Out
13	ARINC 429 OUT 2 A	Out
14	ARINC 429 OUT 1 A	Out
15	ARINC 429 IN 1 A	In
16	CONFIG MODULE DATA	I/O
17	CONFIG MODULE POWER OUT	Out
18	AIRCRAFT POWER 1	In
19	ARINC 429 OUT 3 B	Out
20	AIRCRAFT POWER 2	In
21	GPS 2 RS-232 OUT	Out
22	POWER GROUND	--
23	SPARE RS-232 OUT 1	Out
24	POWER GROUND	--
25	MAGNETOMETER RS-485 IN A	In
26	GPS 1 RS-232 OUT	Out
27	ARINC 429 OUT 3 B	Out
28	ARINC 429 OUT 2 B	Out
29	ARINC 429 OUT 1 B	Out
30	ARINC 429 IN 1 B	In
31	CONFIG MODULE CLOCK	Out
32	SPARE	--
33	ARINC 429 OUT 3 A	Out
34	SPARE	--
35	SIGNAL GROUND	--

36	SPARE	--
37	SIGNAL GROUND	--
38	SIGNAL GROUND	--
39	MAGNETOMETER RS-485 IN B	In
40	MAGNETOMETER GROUND	--
41	SIGNAL GROUND	--
42	SIGNAL GROUND	--
43	SIGNAL GROUND	--
44	SIGNAL GROUND	--

A.9 GMU 44

P441

View of J441 connector looking at pigtail

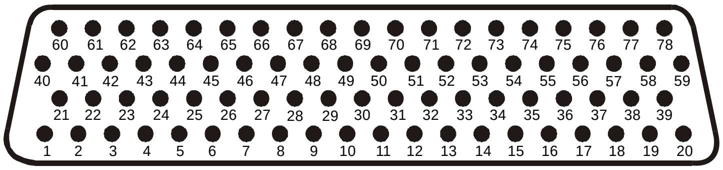


Pin	Pin Name	I/O
1	SIGNAL GROUND	--
2	RS-485 OUT B	Out
3	SIGNAL GROUND	--
4	RS-485 OUT A	Out
5	SPARE	--
6	POWER GROUND	--
7	SPARE	--
8	RS-232 IN	In
9	+12 VDC POWER	In

A.10 GDC 74A

P741

View of J741 connector looking at unit



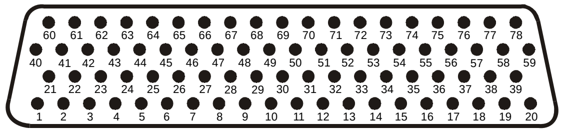
Pin	Pin Name	I/O
1	CONFIG MODULE GROUND	--
2	OAT PROBE POWER OUT	Out
3	OAT PROBE IN HI	In
4	OAT PROBE IN LO	In
5	SIGNAL GROUND	--
6	ADC SYSTEM ID PROGRAM* 1	In
7	SIGNAL GROUND	--
8	DISCRETE IN* 6	In
9	SIGNAL GROUND	--
10	RS-232 IN 1	In
11	RS-232 OUT 1	Out
12	SIGNAL GROUND	--
13	RS-232 IN 2	In
14	RS-232 OUT 2	Out
15	SIGNAL GROUND	--
16	RESERVED	--
17	POWER GROUND	--
18	POWER GROUND	--
19	POWER GROUND	--
20	POWER GROUND	--
21	CONFIG MODULE POWER OUT	Out
22	SPARE	--
23	ARINC 429 IN 1 A	In
24	ARINC 429 IN 1 B	In
25	SIGNAL GROUND	--
26	ARINC 429 OUT 1 A	Out
27	ARINC 429 OUT 1 B	Out
28	SIGNAL GROUND	--
29	ARINC 429 OUT 2 A	Out
30	ARINC 429 OUT 2 B	Out
31	SIGNAL GROUND	--
32	ARINC 429 OUT 3 A	Out
33	ARINC 429 OUT 3 B	Out
34	SIGNAL GROUND	--
35	ARINC 429 IN 2 A	In
36	ARINC 429 IN 2 B	In

Connector P741, continued		
Pin	Pin Name	I/O
37	SIGNAL GROUND	--
38	SPARE	--
39	SPARE	--
40	CONFIG MODULE DATA	I/O
41	ARINC 429 OUT 1 A	Out
42	ARINC 429 OUT 1 B	Out
43	SIGNAL GROUND	--
44	ARINC 429 OUT 2 A	Out
45	ARINC 429 OUT 2 B	Out
46	SIGNAL GROUND	--
47	ARINC 429 OUT 3 A	Out
48	ARINC 429 OUT 3 B	Out
49	SIGNAL GROUND	--
50	DISCRETE IN 7	In
51	SIGNAL GROUND	--
52	DISCRETE IN 8	In
53	SIGNAL GROUND	--
54	SPARE	--
55	AIRCRAFT POWER 1	In
56	SPARE	--
57	SPARE	--
58	AIRCRAFT POWER 2	In
59	SPARE	--
60	CONFIG MODULE CLOCK	Out
61	DISCRETE IN* 1	In
62	SIGNAL GROUND	--
63	DISCRETE IN* 2	In
64	SIGNAL GROUND	--
65	DISCRETE IN* 3	In
66	SIGNAL GROUND	--
67	DISCRETE IN* 4	In
68	SIGNAL GROUND	--
69	DISCRETE IN* 5	In
70	SIGNAL GROUND	--
71	ADC SYSTEM ID PROGRAM* 2	In
72	SIGNAL GROUND	--
73	ARINC 429 IN 3 A	In
74	ARINC 429 IN 3 B	In
75	SIGNAL GROUND	--
76	ARINC 429 IN 4 A	In
77	ARINC 429 IN 4 B	In
78	SIGNAL GROUND	--

A.11 GEA 71

P701

View of J701 connector looking at unit

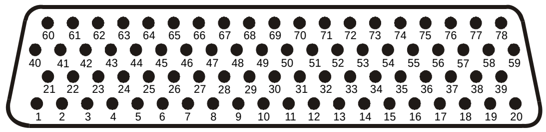


Pin	Pin Name	I/O
1	CONFIG MODULE GROUND	--
2	DIGITAL IN* 1	In
3	DIGITAL IN* 2	In
4	SIGNAL GROUND	--
5	RS-485 1 A	I/O
6	RS-485 1 B	I/O
7	RS-485 2 A	I/O
8	RS-485 2 B	I/O
9	GEA SYSTEM ID PROGRAM* 1	In
10	GEA SYSTEM ID PROGRAM* 2	In
11	TRANSDUCER POWER OUT LO (GROUND)	--
12	TRANSDUCER POWER OUT LO (GROUND)	--
13	TRANSDUCER POWER OUT LO (GROUND)	--
14	+10 VDC TRANSDUCER POWER OUT	Out
15	+5 VDC TRANSDUCER POWER OUT	Out
16	+12 VDC TRANSDUCER POWER OUT	Out
17	ENGINE TEMP ANALOG IN 6 HI	In
18	ENGINE TEMP ANALOG IN 6 LO	In
19	SIGNAL GROUND	--
20	POWER GROUND	--
21	CONFIG MODULE POWER OUT	Out
22	ANALOG IN 1 HI	In
23	ANALOG IN 1 LO	In
24	ANALOG IN 2 HI	In
25	ANALOG IN 2 LO	In
26	ENGINE TEMP ANALOG IN 1 HI	In
27	ENGINE TEMP ANALOG IN 1 LO	In
28	ENGINE TEMP ANALOG IN 2 HI	In
29	ENGINE TEMP ANALOG IN 2 LO	In
30	ENGINE TEMP ANALOG IN 3 HI	In
31	ENGINE TEMP ANALOG IN 3 LO	In
32	SIGNAL GROUND	--
33	ENGINE TEMP ANALOG IN 4 HI	In
34	ENGINE TEMP ANALOG IN 4 LO	In
35	AIRCRAFT POWER 1	In
36	ENGINE TEMP ANALOG IN 5 HI	In
37	AIRCRAFT POWER 2	In
38	ENGINE TEMP ANALOG IN 5 LO	In

Connector P701, continued		
Pin	**Pin Name**	**I/O**
39	SIGNAL GROUND	--
40	CONFIG MODULE DATA	I/O
41	DIGITAL IN* 3	In
42	ANALOG IN 3 HI	In
43	ANALOG IN 3 LO	In
44	ANALOG IN 4 HI	In
45	ANALOG IN 4 LO	In
46	ANALOG IN 5 HI	In
47	ANALOG IN 5 LO	In
48	ENGINE TEMP ANALOG IN 7 HI	In
49	ENGINE TEMP ANALOG IN 7 LO	In
50	ENGINE TEMP ANALOG IN 8 HI	In
51	ENGINE TEMP ANALOG IN 8 LO	In
52	ENGINE TEMP ANALOG IN 9 HI	In
53	ENGINE TEMP ANALOG IN 9 LO	In
54	ENGINE TEMP ANALOG IN 10 HI	In
55	ENGINE TEMP ANALOG IN 10 LO	In
56	ENGINE TEMP ANALOG IN 11 HI	In
57	ENGINE TEMP ANALOG IN 11 LO	In
58	ENGINE TEMP ANALOG IN 12 HI	In
59	ENGINE TEMP ANALOG IN 12 LO	In
60	CONFIG MODULE CLOCK	Out
61	DIGITAL IN* 4	In
62	ANALOG IN 6 HI	In
63	ANALOG IN 6 LO	In
64	ANALOG IN 7 HI	In
65	ANALOG IN 7 LO	In
66	ANALOG IN 8 HI	In
67	ANALOG IN 8 LO	In
68	THERMOCOUPLE REF IN HI	In
69	THERMOCOUPLE REF IN LO	In
70	DISCRETE IN* 1	In
71	DISCRETE IN* 2	In
72	ANALOG IN 9 HI	In
73	ANALOG IN 9 LO	In
74	ANALOG IN 10 HI	In
75	ANALOG IN 10 LO	In
76	DISCRETE IN* 3	In
77	GEA REMOTE POWER OFF	In
78	POWER GROUND	--

A.12 P702

View of J702 connector looking at unit

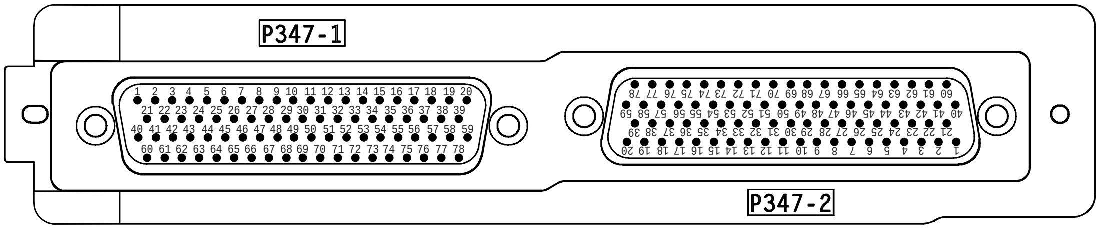


Pin	Pin Name	I/O
1	ANNUNCIATE* 1A	Out
2	ANNUNCIATE* 2A	Out
3	ANNUNCIATE* 3A	Out
4	ANNUNCIATE* 4A	Out
5	ANNUNCIATE* 5A	Out
6	ANNUNCIATE* 6A	Out
7	ANNUNCIATE* 7A	Out
8	ANNUNCIATE* 8A	Out
9	ANNUNCIATE* 9A	Out
10	ANNUNCIATE* 10A	Out
11	TRANSDUCER POWER OUT LO (GROUND)	--
12	TRANSDUCER POWER OUT LO (GROUND)	--
13	TRANSDUCER POWER OUT LO (GROUND)	--
14	+10 VDC TRANSDUCER POWER OUT A	Out
15	+5 VDC TRANSDUCER POWER OUT A	Out
16	+12 VDC TRANSDUCER POWER OUT A	Out
17	ANNUNCIATE* 11A	Out
18	ANNUNCIATE* 12A	Out
19	ANNUNCIATE* 13A	Out
20	ANNUNCIATE* 14A	Out
21	ANNUNCIATE* 15A	Out
22	ANNUNCIATE* 16A	Out
23	ANNUNCIATE* 17A	Out
24	ANNUNCIATE* 18A	Out
25	DISCRETE IN* 11A	In
26	DISCRETE IN* 12A	In
27	DISCRETE IN* 13A	In
28	DISCRETE IN* 14A	In
29	DISCRETE IN* 15A	In
30	DISCRETE IN* 16A	In
31	SIGNAL GROUND	--
32	SIGNAL GROUND	--
33	SIGNAL GROUND	--
34	SIGNAL GROUND	--
35	SIGNAL GROUND	--
36	SIGNAL GROUND	--
37	SIGNAL GROUND	--
38	SIGNAL GROUND	--
39	SIGNAL GROUND	--

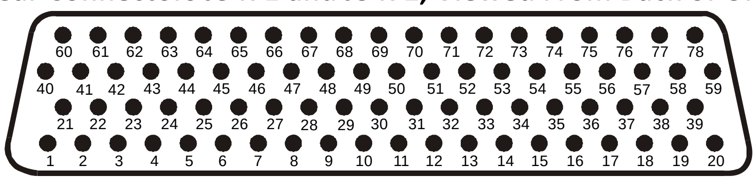
Connector P702, continued		
Pin	Pin Name	I/O
40	DISCRETE IN* 17A	In
41	DISCRETE IN* 18A	In
42	DISCRETE IN* 19A	In
43	DISCRETE IN* 20A	In
44	ANALOG/CURRENT MONITOR IN 1A HI	In
45	ANALOG/CURRENT MONITOR IN 1A LO	In
46	ANALOG/CURRENT MONITOR IN 2A HI	In
47	ANALOG/CURRENT MONITOR IN 2A LO	In
48	ANALOG/CURRENT MONITOR IN 3A HI	In
49	ANALOG/CURRENT MONITOR IN 3A LO	In
50	ANALOG/CURRENT MONITOR IN 4A HI	In
51	ANALOG/CURRENT MONITOR IN 4A LO	In
52	ANALOG IN 1A HI	In
53	ANALOG IN 1A LO	In
54	ANALOG IN 2A HI	In
55	ANALOG IN 2A LO	In
56	ANALOG IN 3A HI	In
57	ANALOG IN 3A LO	In
58	ANALOG IN 4A HI	In
59	ANALOG IN 4A LO	In
60	DISCRETE IN* 1A	In
61	DISCRETE IN* 2A	In
62	DISCRETE IN* 3A	In
63	DISCRETE IN* 4A	In
64	DISCRETE IN* 5A	In
65	DISCRETE IN* 6A	In
66	DISCRETE IN* 7A	In
67	DIGITAL IN* 5A	In
68	DIGITAL IN* 6A	In
69	DIGITAL IN* 7A	In
70	DIGITAL IN* 8A	In
71	DISCRETE IN* 8A	In
72	DISCRETE IN* 9A	In
73	DISCRETE IN* 10A	In
74	DIGITAL IN* 1A	In
75	DIGITAL IN* 2A	In
76	DIGITAL IN* 3A	In
77	DIGITAL IN* 4A	In
78	SIGNAL GROUND	--

A.13 GMA 347

The GMA 347 has two 78-pin connectors located at the rear of the unit designated P3471 and P3472. P3471 and P3472 are clearly marked on the back of the rack. P3471 and P3472 pins are configured as shown in the following illustration:



Rear Connectors J3471 and J3472, Viewed From Back of Unit



J3471 Pin Assignments

Pin	Pin Name	I/O
1	FAIL SAFE WARN AUDIO IN	In
2	RESERVED	--
3	TEL RINGER AUDIO IN HI	In
4	TEL RINGER AUDIO IN LO	In
5	RESERVED	--
6	ON-SIDE NAV AUDIO IN HI	In
7	ON-SIDE COM AUDIO IN HI	In
8	ON-SIDE COM AUDIO LO	I/O
9	PILOT HEADSET AUDIO OUT LEFT	Out
10	PILOT HEADSET AUDIO OUT RIGHT	Out
11	PILOT HEADSET AUDIO OUT LO	Out
12	CROSS-SIDE COM AUDIO IN HI	In
13	CROSS-SIDE COM AUDIO LO	I/O
14	CROSS-SIDE NAV AUDIO IN HI	In
15	DME AUDIO IN HI	In
16	DME AUDIO IN LO	In
17	MUSIC IN 1 LEFT	In
18	MUSIC IN 1 RIGHT	In
19	UNSWITCHED AUDIO IN 1 HI	In
20	UNSWITCHED AUDIO IN 2 HI	In
21	RESERVED	--
22	RESERVED	--
23	TEL MIC AUDIO OUT HI	Out
24	PASS ICS KEY*	In
25	ON-SIDE NAV AUDIO IN LO	In
26	ON-SIDE COM MIC AUDIO OUT HI	Out
27	ON-SIDE COM MIC KEY*	Out
28	PILOT MIC AUDIO IN HI	In
29	PILOT MIC KEY* IN	In
30	PILOT MIC IN LO	In
31	PILOT ICS KEY*	In
32	CROSS-SIDE COM MIC AUDIO OUT HI	Out
33	CROSS-SIDE COM MIC KEY*	Out
34	CROSS-SIDE NAV AUDIO IN LO	In
35	ADF AUDIO IN HI	In
36	ADF AUDIO IN LO	In
37	MUSIC IN 1 LO	In

* Denotes Active Low (Inputs: ground to activate; Outputs: grounded when active).

J3471 Pin Assignments (Continued)

Pin	Pin Name	I/O
38	UNSWITCHED AUDIO IN 3 HI	In
39	UNSWITCHED AUDIO IN LO	In
40	RESERVED	--
41	RESERVED	--
42	TEL AUDIO IN HI	In
43	TEL AUDIO IN LO	In
44	PASS 3 MIC AUDIO IN HI	In
45	PASS 3 MIC AUDIO IN LO	In
46	PASS 1 MIC AUDIO IN HI	In
47	PASS 1 MIC AUDIO IN LO	In
48	PASS HEADSET AUDIO OUT LO	Out
49	COPILOT MIC AUDIO IN HI	In
50	COPILOT MIC KEY* IN	In
51	COPILOT MIC IN LO	In
52	COPILOT ICS KEY*	In
53	RESERVED	--
54	ALTITUDE WARN AUDIO IN HI	In
55	ALTITUDE WARN AUDIO IN LO	In
56	MUSIC IN 2 LEFT	In
57	MUSIC IN 2 RIGHT	In
58	COM 3 AUDIO IN HI	In
59	COM 3 AUDIO LO	I/O
60	RESERVED	--
61	RESERVED	--
62	TEL MIC AUDIO OUT LO	Out
63	PASS 4 MIC AUDIO IN HI	In
64	PASS 4 MIC AUDIO IN LO	In
65	PASS 2 MIC AUDIO IN HI	In
66	PASS 2 MIC AUDIO IN LO	In
67	PASS HEADSET AUDIO OUT LEFT	Out
68	PASS HEADSET AUDIO OUT RIGHT	Out
69	COPILOT HEADSET AUDIO OUT LEFT	Out
70	COPILOT HEADSET AUDIO OUT RIGHT	Out
71	COPILOT HEADSET AUDIO OUT LO	Out
72	RESERVED	--
73	RESERVED	--
74	AUX AUDIO IN HI	In
75	AUX AUDIO IN LO	In
76	MUSIC IN 2 LO	In
77	COM 3 MIC AUDIO OUT HI	Out
78	COM 3 MIC KEY*	Out

* Denotes Active Low (Inputs: ground to activate; Outputs: grounded when active).

J3472 Pin Assignments

Pin	Pin Name	I/O
1	CONFIG MODULE GROUND	--
2	RESERVED	--
3	PROGRAM GROUND	--
4	RECORDER PLAY*	In
5	PROGRAM GROUND	--
6	RS-232 OUT 1	Out
7	RS-232 IN 1	In
8	RESERVED	--
9	RESERVED	--
10	RESERVED	--
11	PROGRAM GROUND	--
12	RESERVED	--
13	RESERVED	--
14	POWER GROUND	--
15	RESERVED	--
16	POWER GROUND	--
17	COM SWAP*	In
18	PROGRAM GROUND	--
19	RESERVED	--
20	RESERVED	--
21	CONFIG MODULE POWER OUT	Out
22	RESERVED	--
23	PROGRAM GROUND	--
24	RECORDER OFF SELECT*	In
25	PROGRAM GROUND	--
26	AUX SOURCE SELECT*	In
27	RESERVED	--
28	RESERVED	--
29	RESERVED	--
30	AIRCRAFT POWER 2	In
31	RESERVED	--
32	AIRCRAFT POWER 2	In
33	RESERVED	--
34	MIDDLE MARKER SENSE	Out
35	RESERVED	--
36	RESERVED	--
37	GROUND RETURN	--

* Denotes Active Low (Inputs: ground to activate; Outputs: grounded when active).

J3472 Pin Assignments (Continued)

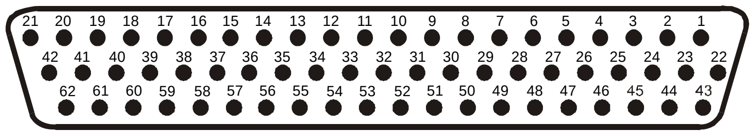
Pin	Pin Name	I/O
38	RS-232 OUT 2	Out
39	RS-232 IN 2	In
40	CONFIG MODULE DATA	I/O
41	SPEAKER AUDIO OUT LO	Out
42	SPEAKER AUDIO OUT HI	Out
43	RESERVED	--
44	PROGRAM GROUND	--
45	RESERVED	--
46	PROGRAM GROUND	--
47	RESERVED	--
48	RESERVED	--
49	RESERVED	--
50	RESERVED	--
51	14 V LIGHTING HI	In
52	28 V LIGHTING HI	In
53	AIRCRAFT POWER 1	In
54	RESERVED	--
55	AIRCRAFT POWER 1	In
56	RESERVED	--
57	GROUND RETURN	--
58	RESERVED	--
59	MARKER ANTENNA LO	In
60	CONFIG MODULE CLOCK	Out
61	RESERVED	--
62	RESERVED	--
63	RESERVED	--
64	PA MUTE* OUT	Out
65	RESERVED	--
66	RESERVED	--
67	PROGRAM GROUND	--
68	RESERVED	--
69	POWER GROUND	--
70	RESERVED	--
71	POWER GROUND	--
72	RESERVED	--
73	RESERVED	--
74	AIRWAY/INNER MARKER EXT LAMP OUT	Out
75	MIDDLE MARKER EXT LAMP OUT	Out
76	OUTER MARKER EXT LAMP OUT	Out
77	RESERVED	--
78	MARKER ANTENNA HI	In

* Denotes Active Low (Inputs: ground to activate; Outputs: grounded when active).

A.14 GTX 32/33

P3301

View of J3301 connector looking at unit



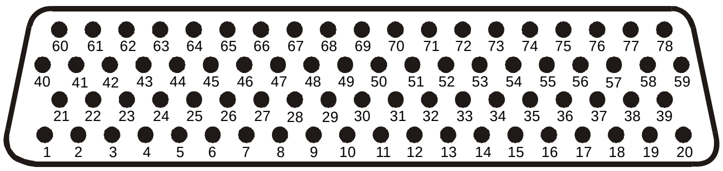
Pin	Pin Name	I/O
1	RESERVED	--
2	ALTITUDE A1	In
3	ALTITUDE C2	In
4	ALTITUDE A2	In
5	ALTITUDE A4	In
6	ALTITUDE C4	In
7	ALTITUDE B1	In
8	ALTITUDE C1	In
9	ALTITUDE B2	In
10	ALTITUDE B4	In
11	ALTITUDE D4	In
12	EXTERNAL IDENT SELECT*	In
13	EXTERNAL STANDBY SELECT*	In
14	NOT USED	In
15	AUDIO OUT HI	Out
16	AUDIO OUT LO	Out
17	SQUAT SWITCH IN	In
18	RESERVED	--
19	ALTITUDE ALERT ANNUNCIATE*	Out
20	RESERVED	--
21	AIRCRAFT POWER 1	In
22	RS-232 IN 1	In
23	RS-232 OUT 1	Out
24	RS-232 IN 2	In
25	RS-232 OUT 2	Out
26	ARINC 429 IN 3 A	In
27	POWER GROUND	--
28	ARINC 429 OUT 2 B	Out
29	ARINC 429 IN 3 B	In
30	ARINC 429 OUT 2 A	Out
31	EXTERNAL SUPPRESSION I/O	I/O
32	ARINC 429 IN 1 A	In
33	ARINC 429 IN 2 A	In
34	ARINC 429 OUT 1 B	Out
35	ARINC 429 IN 1 B	In
36	ARINC 429 IN 2 B	In
37	ARINC 429 OUT 1 A	Out
38	RESERVED	--

39	RESERVED	--
40	SPARE	--
41	CURRENT TEMPERATURE PROBE OUT	Out
42	AIRCRAFT POWER 1	In
43	POWER GROUND	--
44	CURRENT TEMPERATURE PROBE IN	In
45	NOT USED	In
46	TIS CONNECT SELECT*	In
47	AUDIO MUTE SELECT*	In
48	ARINC 429 IN 4 A	In
49	ARINC 429 IN 4 B	In
50	ALTITUDE COMMON (GROUND)	In
51	SIGNAL GROUND	--
52	RESERVED	--
53	RESERVED	--
54	XPDR REMOTE POWER OFF	In
55	NOT USED	--
56	AIRCRAFT POWER 2	In
57	NOT USED	--
58	SIGNAL GROUND	--
59	NOT USED	--
60	AIRCRAFT POWER 2	In
61	NOT USED	--
62	SWITCHED POWER OUT	Out

A.15 GDL 69A

P691

View of J691 connector from back of unit



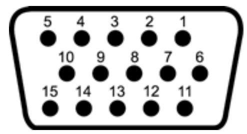
Pin	Pin Name	I/O
1	CONFIG MODULE GROUND	Out
2	RS-232 OUT 2	Out
3	RS-232 OUT 3	Out
4	SIGNAL GROUND	--
5	RS-232 IN 2	In
6	RS-232 IN 3	In
7	RS-232 IN 1	In
8	RS-232 OUT 1	Out
9	DATA LINK SYSTEM ID PROGRAM 1	In
10	DATA LINK SYSTEM ID PROGRAM 2	In
11	SIGNAL GROUND	--
12	SPARE	--
13	SIGNAL GROUND	--
14	SPARE	--
15	SPARE	--
16	SPARE	--
17	AUDIO OUT 1 LO	Out
18	AUDIO OUT 1 RIGHT	Out
19	AUDIO OUT 1 LEFT	Out
20	POWER GROUND	--
21	CONFIG MODULE POWER OUT	Out
22	ETHERNET IN 1 B	In
23	ETHERNET IN 1 A	In
24	ETHERNET OUT 1 B	Out
25	ETHERNET OUT 1 A	Out
26	ETHERNET IN 2 B	In
27	ETHERNET IN 2 A	In
28	ETHERNET OUT 2 B	Out
29	ETHERNET OUT 2 A	Out
30	ETHERNET IN 3 B	In
31	ETHERNET IN 3 A	In
32	ETHERNET OUT 3 B	Out
33	ETHERNET OUT 3 A	Out
34	SPARE	--
35	AIRCRAFT POWER 1	In
36	SPARE	--
37	AIRCRAFT POWER 2	In

38	SPARE	--
39	SIGNAL GROUND	--
40	CONFIG MODULE DATA	I/O
41	SPARE	--
42	SPARE	--
43	SPARE	--
44	SPARE	--
45	SPARE	--
46	SPARE	--
47	SPARE	--
48	SPARE	--
49	SPARE	--
50	SPARE	--
51	SPARE	--
52	RESERVED	--
53	RESERVED	--
54	RESERVED	--
55	SPARE	--
56	ETHERNET IN 4 B	In
57	ETHERNET IN 4 A	In
58	ETHERNET OUT 4 B	Out
59	ETHERNET OUT 4 A	Out
60	CONFIG MODULE CLOCK	Out
61	AUDIO MUTE SELECT 1	In
62	AUDIO MUTE SELECT 2	In
63	AUDIO MUTE SELECT 3	In
64	AUDIO MUTE SELECT* 4	In
65	AUDIO MUTE SELECT* 5	In
66	AUDIO MUTE SELECT* 6	In
67	DISCRETE IN 2	In
68	DISCRETE IN 1	In
69	RESERVED	--
70	AUDIO MUTE*	In
71	CHANNEL INCREMENT*	In
72	CHANNEL DECREMENT*	In
73	VOLUME INCREMENT*	In
74	VOLUME DECREMENT*	In
75	SIGNAL GROUND	--
76	SPARE	--
77	DATA LINK REMOTE POWER OFF	In
78	POWER GROUND	In

A.16 GMC 710

P701

View of J7101 connector looking at unit



Pin	Pin Name	I/O
1	RS-232 OUT 1	Out
2	RS-232 IN 1	In
3	RS-232 OUT 2	Out
4	RS-232 IN 2	In
5	POWER GROUND	--
6	SIGNAL GROUND	--
7	AIRCRAFT POWER 1	In
8	SIGNAL GROUND	--
9	AIRCRAFT POWER 2	In
10	CONTROL UNIT REMOTE POWER OFF	In
11	LIGHTING BUS HI	In
12	LIGHTING BUS LO	In
13	RESERVED	--
14	RESERVED	--
15	POWER GROUND	--