GARMIN G1000 GLOBAL POSITIONING SYSTEM - TROUBLESHOOTING

1. General

A. This section gives the troubleshooting for the Garmin G1000 Global Positioning System (GPS). For a general description of the GPS, refer to Garmin G1000 Global Positioning System - Description and Operation.

2. Global Positioning System (GPS) Troubleshooting

A. Tools and Equipment

NOTE: For the supplier publication part number and manufacturer data, refer to the Introduction - Supplier Publication List.

(1) Tools and Equipment

- Multimeter.

(2) Special Consumables

- None.

(3) Reference Material

- Garmin GDL 69 XM Data Link System - Adjustment/Test
- Garmin G1000 Global Positioning System - Description and Operation
- Comant Global Positioning System (GPS)/XM Antenna - Removal/Installation
- Garmin G1000 Global Positioning System - Adjustment/Test
- Garmin G1000 Integrated Avionics System - Troubleshooting
- Garmin G1000 Integrated Avionics System - Adjustment/Test
- Garmin G1000 GIA 63W/64W Integrated Avionics Unit - Removal/Installation
- Model 208 Wiring Diagram Manual.

B. Do the Airplane for the Global Positioning System (GPS) Troubleshooting.

(1) Connect external electrical power to the airplane.

(2) Make sure that the circuit breakers given in Table 101 are engaged.

Table 101. Circuit Breakers

Component Location	Circuit Breaker Name	Circuit Breaker Location
Left (No.1) Garmin GIA 63W/64W Integrated Avionics Unit	COM 1	Avionics Circuit Breaker Panel
	NAV 1	Avionics Circuit Breaker Panel
Right (No. 2) Garmin GIA 63W/64W Integrated Avionics Unit	COM 2	Avionics Circuit Breaker Panel
	NAV 2	Avionics Circuit Breaker Panel

(3) Refer to Chapter 34, Garmin G1000 Integrated Avionics System - Adjustment/Test G1000 Architecture Verification Check and make sure that:

(a) The correct software and configuration has been installed.

(b) All related systems are serviceable.

(c) The LRU serial number or a version number is not dashed.

(4) Make sure the GPS1, GPS2, GIA1 and GIA2 have check marks (green) next to their nomenclature on the list.

(a) This indicates the line replaceable unit (LRU) is serviceable.

(5) Make sure that on the System Status List the GPS1 or GPS2 do not show a red X.

(6) Push the rightmost softkey on the PFD and make sure that no messages show in the Alerts window.

(7) If a serial number or a version number is dashed, carefully examine the applicable electrical wiring and components as follows: Refer to the Model 208 Wiring Diagram Manual, Chapter 20, Wiring - Maintenance Practices.

NOTE: Serial number is not reported for the following equipment: COM1, COM2, GS1, GS2, GTX1, GTX 2 (OPT), NAV1, NAV2, AND WX500.

(a) Do a visual check of the electrical connectors and airplane electrical connectors for bent pins and pushed back pins.

1 If necessary, repair the damage.

(b) Make sure that electrical power and ground signals are present.

(c) Make sure that data bus lines are correctly terminated and secure.

CAUTION: Do not touch bus wiring to each other or to shield grounds. Damage to equipment or circuits can result.

(d) Remove electrical power from the airplane.

(e) Use a multimeter to do a continuity check of the bus wires.

1 Make sure that there is continuity only from each wires' related pin end to end and to no other wires, airplanes grounds, or shields.

(f) Do a visual check of the wiring components and make sure that all applicable strapping is correct and any necessary G1000 system strapping is correct.

(g) Do a visual check of the wiring bundles for damage.

1 If necessary, repair or replace the wiring bundles. Refer to the Model 208 Wiring Diagram Manual, Chapter 20, Wiring - Maintenance Practices.

(h) Do a check of the applicable system wiring for continuity, ground faults, or other unserviceable conditions.

1 If necessary, repair or replace the wiring bundles. Refer to the Model 208 Wiring Diagram Manual, Chapter 20, Wiring - Maintenance Practices.

(i) Replace the applicable GPS Comant antenna. Refer to Comant Global Positioning System (GPS)/XM Antenna - Removal/Installation.

1 Do the GPS check. Refer to Garmin G1000 Global Positioning System - Adjustment/Test.

(j) If the problem does not follow the GIA 63W/64W Integrated Avionics Unit, or replaced antenna does not correct the anomaly, there is a wiring bundle, coaxial, or configuration/software fault. Continue troubleshooting the system fault. Refer to the Model 208 Wiring Diagram Manual, Chapter 20, Wiring - Maintenance Practices.

C. GPS CAS Message Troubleshooting.

(1) Check the primary flight display crew alert system (CAS) window messages to aid in troubleshooting the anomaly.

(a) For CAS messages related to other Garmin LRU's, refer to the applicable LRU section for CAS message troubleshooting.

(b) Push the rightmost softkey on the PFD and make sure that no CAS Alert messages show in the Alerts window.

1 For GPS CAS Alert message troubleshooting refer to Table 102.

Table 102. GPS CAS Alert Messages

GPS CAS Alert Messages	Cause	Corrective Actions
GPS1 SERVICE – GPS1 needs service. Return unit for repair.	The G1000 has detected a failure in GPS 1 receiver.	1. Replace GIA 1. Refer to Garmin G1000 GIA 63W/64W Integrated Avionics Unit - Removal/Installation.
GPS2 SERVICE – GPS2 needs service. Return unit for repair.	The G1000 has detected a failure in GPS 1 receiver.	1. Replace GIA 1. Refer to Garmin G1000 GIA 63W/64W Integrated Avionics Unit - Removal/Installation.
GPS1 FAIL – GPS1 is inoperative.	The G1000 has detected a failure in GPS 1 receiver.	1. Make sure the GPS 1 antenna and coaxial cable are serviceable. Refer to Model 208 Wiring Diagram manual.
GPS2 FAIL – GPS2 is inoperative.	The G1000 has detected a failure in GPS 2 receiver.	1. Make sure the GPS 2 antenna and coaxial cable are serviceable. Refer to Model 208 Wiring Diagram manual.
GPS NAV LOST – Loss of GPS Navigation. Position error.	When a position error is detected, GPS is flagged and the system no longer provides GPS-based guidance.	1. Ignore message. This message is not likely to occur without other GPS messages.

GPS NAV LOST ◆ Loss of GPS Navigation. GPS Fail.	GPS navigation capability has been lost due to a failure of a GPS. Indicates failure of a previously working GPS.	1. Do the GPS operational check and replace GIA that does not show as being serviceable. Refer to Garmin G1000 GIA 63W/64W Integrated Avionics Unit - Removal/Installation.

D. Put the Airplane Back to its Initial Condition.

(1) If the Comant GPS antenna 1 (left) was replaced, do a check of the GDL XM Data Link system. Refer to Garmin GDL 69 XM Data Link System - Adjustment/Test.

(2) Disconnect the external electrical power from the airplane.