GARMIN G1000 ATTITUDE HEADING REFERENCE SYSTEM - TROUBLESHOOTING

1. General

A. This section gives the troubleshooting for the Garmin G1000 Attitude Heading Reference System (AHRS). For a general description of the Garmin G1000 Attitude Heading Reference System, refer to Garmin G1000 Attitude Heading Reference System - Description and Operation.

2. Garmin G1000 AHRS 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 G1000 Air Data Computer System - Removal/Installation
- Garmin GMU 44/44B Magnetometer - Removal/Installation
- Garmin G1000 Attitude Heading Reference System - Description and Operation
- Garmin G1000 Attitude Heading Reference System - Removal/Installation
- 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 Garmin G1000 AHRS Troubleshooting.

NOTE: AHRS System information may take several minutes to become valid after boot up.

NOTE: ADC System information may take a minute to become valid after boot up.

(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	Circuit Breaker Name	Circuit Breaker Location
GRS 77/79 AHRS #1	AHRS 1	Avionics Circuit Breaker Panel
GRS 77/79 AHRS #2	AHRS 2	Avionics Circuit Breaker Panel

(3) Refer to Do the Architecture Verification check and make sure all related systems are serviceable. Refer to G1000 Integrated Avionics System - Adjustment/Test, G1000 Architecture Verification Check.

(a) Make sure that the correct software and configuration has been installed.

(4) Make sure the GRS1, GRS2, GIA1 and GIA2 have check marks (green) next to their nomenclature on the list.

(a) This indicates the LRU is serviceable.

(5) Make sure that on the System Status List the GRS1 and/or GRS2 do not show a red X .

(6) If the Garmin GIA shows a red X on the Avionics Aux System Status page, make sure that the electrical power and ground connections to the GIA is serviceable. Refer to the Model 208 Wiring Diagram Manual, Chapter 20, Wiring - Maintenance Practices.

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

(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.

(8) If the AHRS system wiring is serviceable replace the applicable AHRS. Refer to Garmin G1000 Attitude Heading Reference System - Removal/Installation.

(a) Do a check of the AHRS again. Refer to Garmin G1000 Attitude Heading Reference System - Adjustment/Test.

C. Do the Garmin G1000 AHRS Alert Message Troubleshooting

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

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

(3) For troubleshooting Garmin G1000 AHRS CAS Alert messages refer to Table 102.

Table 102. GRS/GMU CAS Alert Messages

GRS/GMU CAS Alert Messages	Causes	Corrective Action
AHRS1 TAS ◆ AHRS1 not receiving airspeed data.	GRS 1 is not receiving airspeed data from GDC 1.	1. Make sure the AHRS wiring is serviceable. Refer to Model 208 Wiring Diagram manual. 2. Replace GDC 1. Refer to, Garmin G1000 Air Data Computer System - Removal/Installation. 3. Replace GRS 1. Refer to, Garmin G1000 Attitude Heading Reference System- Removal/Installation.
AHRS2 TAS ◆ AHRS2 not receiving airspeed.	GRS 2 is not receiving airspeed data from GDC 2.	1. Make sure the AHRS wiring is serviceable. 2. Replace GDC 2. Refer to, Garmin G1000 Air Data Computer System - Removal/Installation. 3. Replace GRS 2. Refer to, Garmin G1000 Attitude Heading Reference System- Removal/Installation.

AHRS1 GPS ◆ AHRS1 using backup GPS source.	AHRS 1 is using a backup GPS source. Primary GPS source is unavailable.	1. Make sure that the GPS 1 antenna is serviceable. **NOTE:** **See below** 2. Make sure the GPS 1 wiring and coaxial connection are serviceable. Refer to Model 208 Wiring Diagram manual. 3. Load correct configuration in GIA 1. Refer to, Garmin G1000 Integrated Avionics System - Adjustment/Test. 4. Replace GRS 1. Refer to, Garmin G1000 Attitude Heading Reference System- Removal/Installation.
AHRS2 GPS ◆ AHRS2 using backup GPS source.	AHRS 2 is using a backup GPS source. Primary GPS source is unavailable.	1. Make sure that the GPS 2 antenna is serviceable. **NOTE:** **See below** 2. Make sure the GPS 2 wiring and coaxial connection are serviceable. Refer to Model 208 Wiring Diagram manual. 3. Load correct configuration in GIA 1. Refer to, Garmin G1000 Integrated Avionics System - Adjustment/Test. 4. Replace GRS 2. Refer to, Garmin G1000 Attitude Heading Reference System- Removal/Installation.
AHRS1 GPS ◆ AHRS1 not receiving backup GPS information.	AHRS 1 is using a primary GPS source. Backup GPS source is unavailable.	1. Make sure that the GPS 2 antenna is serviceable. **NOTE:** **See below** 2. Make sure the GPS 2 wiring and coaxial connection are serviceable. Refer to Model 208 Wiring Diagram manual. 3. Load correct configuration in GIA 2. Refer to, Garmin G1000 Integrated Avionics System - Adjustment/Test. 4. Replace GRS 2. Refer to, Garmin G1000 Attitude Heading Reference System- Removal/Installation.

AHRS2 GPS ◆ AHRS2 not receiving backup GPS information.	AHRS 2 is using a primary GPS source. Backup GPS source is unavailable.	1. Make sure that the GPS 1 antenna is serviceable. 2. Make sure the GPS 1 wiring and coaxial connection are serviceable. Refer to Model 208 Wiring Diagram manual. 3. Load correct configuration in GIA 1. Refer to, Garmin G1000 Integrated Avionics System - Adjustment/Test. 4. Replace GRS 1. Refer to, Garmin G1000 Attitude Heading Reference System- Removal/Installation.
AHRS 1 GPS ◆ AHRS1 not receiving any GPS information.	AHRS 1 is not receiving any GPS data. AHRS 1 is operating in the No-GPS mode. Attitude can be flagged (invalid) if magnetometer or ADC information were to become invalid.	1. Do the GPS 1 and GPS 2 Operational Test. Refer to Chapter 23, Garmin G1000 VHF Communication System - Adjustment/Test. 2. Make sure that the applicable GPS wiring and antenna coaxial connection are serviceable. Refer to Model 208 Wiring Diagram manual. 3. Replace the applicable GPS receiver (GIA 63W/64W). Refer to, Garmin G1000 GIA 63W/64W Integrated Avionics Unit - Removal/Installation
AHRS 2 GPS ◆ AHRS2 not receiving any GPS information.	AHRS 2 is not receiving any GPS data. AHRS 2 is operating in the No-GPS mode. Attitude can be flagged (invalid) if magnetometer or ADC data were to become invalid.	1. Do the GPS 1 and GPS 2 Operational Test. Refer to Chapter 23, Garmin G1000 VHF Communication System - Adjustment/Test. 2. Make sure that the applicable GPS wiring and antenna coaxial connection are serviceable. Refer to Model 208 Wiring Diagram manual. 3. Replace the applicable GPS receiver (GIA 63W/64W). Refer to, Garmin G1000 GIA 63W/64W Integrated Avionics Unit - Removal/Installation

AHRS 1 GPS ◆ AHRS1 operating exclusively in no-GPS mode.	AHRS 1 is not using GPS data. AHRS 1 is operating in the No-GPS mode. Attitude can be flagged (invalid) if magnetometer or ADC data were to become invalid.	1. Do the GPS 1 and GPS 2 Operational Test. Refer to Chapter 23, Garmin G1000 VHF Communication System - Adjustment/Test. 2. Make sure that the applicable GPS wiring and antenna coaxial connection are serviceable. Refer to Model 208 Wiring Diagram manual. 3. Replace the applicable GPS receiver (GIA 63W/64W). Refer to Garmin G1000 GIA 63W/64W Integrated Avionics Unit - Removal/Installation.
AHRS 2 GPS ◆ AHRS2 operating exclusively in no-GPS mode.	AHRS 2 is not using GPS data. AHRS 2 is operating in the No-GPS mode. Attitude can be flagged (invalid) if magnetometer or ADC data were to become invalid.	1. Do the GPS 1 and GPS 2 Operational Test. Refer to Chapter 23, Garmin G1000 VHF Communication System - Adjustment/Test. 2. Make sure that the applicable GPS wiring and antenna coaxial connection are serviceable. Refer to Model 208 Wiring Diagram manual. 3. Replace the applicable GPS receiver (GIA 63W/64W). Refer to Garmin G1000 GIA 63W/64W Integrated Avionics Unit - Removal/Installation.
AHRS 1 SRVC ◆ AHRS 1 magnetic field model needs update.	The AHRS 1 magnetic field model is out of date.	1. Check magnetic field date and time on the PFD configuration setup page. 2. Contact Garmin for update data.
AHRS 2 SRVC ◆ AHRS 2 magnetic field model needs update.	The AHRS 2 magnetic field model is out of date.	1. Check magnetic field date and time on the PFD configuration setup page. 2. Contact Garmin for update data.
AHRS MAG DB ◆ AHRS magnetic model database version mismatch.	AHRS 1 and AHRS 2 have different versions of magnetic field model installed.	1. Attempt to update the magnetic field models to both GRS. 2. Replace the GRS(s) that will not take updated magnetic field model. Refer to, Garmin G1000 Attitude Heading Reference System-Removal/Installation.
MANIFEST ◆ AHRS 1 software mismatch. Communication halted.	The system has detected an incorrect software version loaded in GRS 1.	1. Load correct software into GRS 1. Refer to, Garmin G1000 Integrated Avionics System - Adjustment/Test.
MANIFEST ◆ AHRS 2 software mismatch. Communication halted.	The system has detected an incorrect software version loaded in GRS 2.	1. Load correct software into GRS 2. Refer to, Garmin G1000 Integrated Avionics System - Adjustment/Test.

HDG FAULT – AHRS 1 magnetometer fault has occurred.	A fault has occurred in GMU 1. Heading is flagged (invalid). AHRS 1 is using GPS for backup mode operation.	1. Replace GMU 1. Refer to, Garmin G1000 Attitude Heading Reference System- Removal/Installation.
HDG FAULT – AHRS 2 magnetometer fault has occurred.	A fault has occurred in GMU 2. Heading is flagged (invalid). AHRS 2 is using GPS for backup mode operation.	1. Replace GMU 2. Refer to, Garmin G1000 Attitude Heading Reference System- Removal/Installation.
MANIFEST – GMU 1 software mismatch. Communication halted.	The system has detected an incorrect software version loaded in GMU 1.	1. Load correct software into GMU 1. Refer to, Garmin G1000 Integrated Avionics System - Adjustment/Test.
MANIFEST – GMU 2 software mismatch. Communication halted.	The system has detected an incorrect software version loaded in GMU 2.	1. Load correct software into GMU 2. Refer to, Garmin G1000 Integrated Avionics System - Adjustment/Test.

NOTE: **Make sure the GPS signal strength is good on the MFD AUX - GPS STATUS page before doing any troubleshooting. The airplane may be in a hangar with poor GPS reception.**