



GDL 51

Portable SiriusXM® and GPS Receiver
User's Guide



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This manual reflects the operation of System Software version 2.00, or later. Some differences in operation may be observed when comparing the information in this manual to later software versions.

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Bluetooth®





WARNING: *The attitude information provided by the GDL 51 is not intended to be used as a source of attitude information for flight in instrument meteorological conditions.*



WARNING: *This unit provides the ability to receive weather information through external sources. Use weather data only as an aid to situational awareness. Such weather information is merely supplemental and advisory in nature and is not intended to be relied upon as safety-critical information in connection with any aviation, vehicle, or marine usage. The user should always exercise caution and common sense when confronted with severe weather conditions.*



WARNING: *Do not use data link weather information for maneuvering in, near, or around areas of hazardous weather. Information contained within data link weather products may not accurately depict current weather conditions.*



WARNING: *For safety reasons, GDL 51 operational procedures must be learned on the ground.*



WARNING: *Use the GDL 51 only as an aid for VFR navigation. Do not attempt to use the GDL 51 for any purpose requiring precise measurement of direction, distance, location, or topography. This product should not be used to determine ground proximity for aircraft navigation.*



WARNING: *The altitude calculated by the GPS receiver is geometric height above Mean Sea Level and could vary significantly from the altitude displayed by pressure altimeters.*



WARNING: *The pressure altitude information provided by the GDL 51 in a pressurized airplane will not be accurate. Use the connected display device to disable pressure information from the GDL 51.*



WARNING: *The GDL 51 has a very high degree of functional integrity. However, the pilot must recognize that providing monitoring and/or self-test capability for all conceivable system failures is not practical. Although unlikely, it may be possible for erroneous operation to occur without a fault indication shown by the GDL 51. It is thus the responsibility of the pilot to detect such an occurrence by means of cross-checking with all redundant or correlated information available in the cockpit.*



WARNING: *The GDL 51 contains a lithium-ion battery. To prevent damage, remove the unit from the aircraft or vehicle when exiting or store it out of direct sunlight.*



WARNING: *The United States government operates the Global Positioning System and is solely responsible for its accuracy and maintenance. The GPS system is subject to changes which could affect the accuracy and performance of all GPS equipment.*



WARNING: When installing the GDL 51 in an aircraft, place the unit securely so that it does not interfere with aircraft operating controls or obstruct the pilot's view.



CAUTION: The Garmin GDL 51 does not contain any user-serviceable parts. Repairs should only be made by an authorized Garmin service center. Unauthorized repairs or modifications could void both the warranty and the pilot's authority to operate this device under FAA/FCC regulations.



NOTE: Temporary Flight Restriction (TFR) data is provided by the FAA and may not be updated outside of normal business hours. Confirm data currency through alternate sources and contact the local FSS for interpretation of TFR data. This product has not been endorsed or otherwise approved by the National Geospatial-Intelligence Agency, or the United States Department of Defense (10 U.S.C. 425).



NOTE: All visual depictions contained within this document, including images of the GDL 51 and the bezel, displays, and screens of other products are subject to change and may not reflect the most current software or hardware. Depictions of equipment may differ slightly from the actual equipment.



NOTE: 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 our web site at www.garmin.com/prop65.

FCC Compliance

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and may cause harmful interference to radio communications if not installed and used in accordance with the instructions. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet that is on a different circuit from the unit.
- Consult the dealer or an experienced radio/TV technician for help.

Innovation, Science and Economic Development Canada Compliance

This device complies with Innovation, Science and Economic Development Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Innovation, Sciences et Développement économique Canada - Conformité

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M/N: A02895



1 UNIT OVERVIEW



Figure 1 GDL 51 Interface

1.1 Power and Charging

The unit will always turn on when external power is applied.

Power source via the micro-USB connector:

- 5.0V $\pm$ 0.25V; 1.0A (powered on and slow charge)
- 5.0V $\pm$ 0.25V; 2.0A (powered off and fast charge)

Power Source via the power/data connector:

- 10-32V; 0.75A Max (powered on and slow charge)
- 10-32V; 1.0A Max (powered off and fast charge)



NOTE: *If powered ON from a standard USB wall charger the unit will auto detect the wall charger and go into standby mode. In standby mode, the battery LED will be solid red if charging, or off if the battery is fully charged. Press the power button for normal operation. Maximum total power while in standby mode is 10W. Total charge time is ~2 hours in this state.*



NOTE: *The battery saver feature will turn off the unit when external power is removed if all three of the following conditions are true:*

- 1. Ground Speed less than 20kts OR No GPS fix*
 - 2. No Connex connection*
 - 3. Running on battery only*
-



NOTE: *When the battery saver feature is active and the above three conditions are met, the green battery LED will flash if the unit is about to shut down. Press the power button once to cancel the battery saver feature and keep the unit on.*

2 OPERATION

2.1 Power Button Functions

- ON/OFF – single press
- Clear Paired Devices
 - o See Section 2.2 Bluetooth Setup
- USB Mass Storage Mode – 3 second press
 - o While the unit is booting up, hold the Power Button for 3 seconds.
 - o GPS, SXM LEDs will flash orange while in this state.
 - o Limited functionality, can be used to install SW upgrades.
(see Section 2.3)
 - o Press the power button to exit this mode.
- Reset the Unit – Hold for more than 10 seconds.

2.2 Bluetooth Setup

1. When the GDL 51 is powered on, the GDL 51 will go into pairing mode. Directions for connecting the GDL 51 to a specific display can be found in the display's pilot's guide.
2. The Connex LED will be solid blue when the display device is connected. Two Bluetooth display devices may be connected to the GDL at the same time.
3. A Bluetooth Audio device may also be connected to the GDL 51. Directions for connecting an audio device are included in the pilot's guide of the connected display.



NOTE: *If having issues making a Bluetooth connection hold the power button down for 5 seconds. The blue LED will begin blinking. Release the power button and then press the Power button again for 5 seconds. Power cycle the GDL 51 and retry making a Bluetooth connection. If the problem persists, consult the GDL 51 Installation Manual.*

2.3 Software Updates

Software updates for the GDL 51 can be received through your Garmin display device or from www.garmin.com/products/webupdater/. See the display device documentation for details. Instructions for using Webupdater can be found on the Garmin website.



Figure 2 GDL 51 LEDs

Table 1 GDL 51 Status LEDs

LED Color/ State*	Battery	Connex	GPS	SXM
OFF	Unit off	No active connection	No GPS fix	No signal
RED	Charging (solid) Fault (flashing)	Not used	Fault	Fault
ORANGE	Battery <=20%	N/A	Firmware update	Firmware update
GREEN	Battery >= 20% OR External power is applied Battery saver feature (flashing)	N/A	GPS fix	Marginal good signal
BLUE	N/A	Active connection OR pairing list cleared (flashing)	N/A	N/A

*LEDs are auto-dimming.

3 INSTALLATION

The GDL 51 may be connected to a compatible display device by either a wireless Bluetooth connection or directly through a serial cable. The GDL 51 supports two connections to Bluetooth display devices. The GDL 51 can also be physically wired to two displays.

3.1 Interface Cables

3.1.1 GDL 51 to aera 660 Power/Data Cable

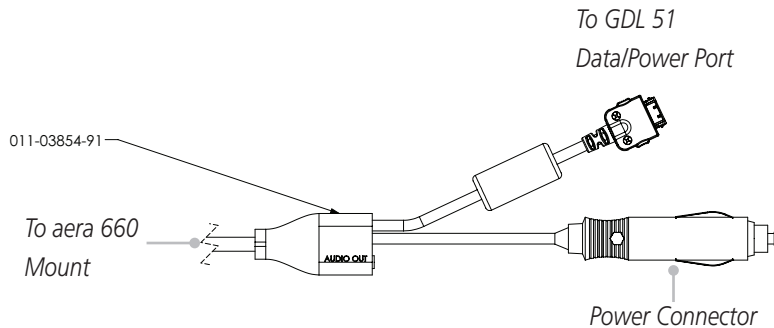


Figure 3 GDL 51 to aera 660 Power/Data Cable (010-12373-02)

3.1.2 GDL 51 to Bare Wire Power/Data Cable

Table 2 GDL 51 to Bare Wire Power/Data Cable Connections

Connection	Wire Color	AWG
Vin 10-32 VDC	Red	26
Not Used	Gray	--
Rx B (Data In)	White/Orange	28
Tx B (Data Out)	Orange	28
Rx A (Data In)	White/Green	28
Tx A (Data Out)	Green	28
Ground	Black	26

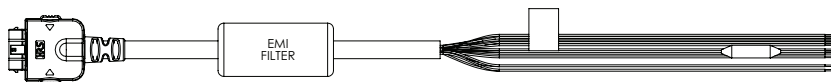


Figure 4 GDL 51 to Bare Wire Power/Data Cable (010-11686-40)

3.2 External Antennas (Optional)

The GDL 51 includes internal GPS and SiriusXM antennas, but can use optional external antennas.



NOTE: *The GDL 51 can receive GPS information when interfaced with certain Garmin GPS receivers. Refer to your specific Garmin display manual to determine if this is supported.*

3.3 GDL 51 Location and Mounting

3.3.1 Location

For best reception position the GDL 51 where it has a clear view of the sky. For proper performance of the attitude function, the GDL 51 should be placed as close as possible to the center of the aircraft (along its longitudinal axis) with the FWD arrow pointing in the direction of flight. If the unit is placed on the glare shield it may get very hot due to the direct sunlight and reduce the operating life of the unit. The GDL 51 antenna, internal or external, should be mounted at least 3.3 feet (1 meter) away from the path of any high powered transmitter antenna, such as a transponder or VHF radio antenna. The GDL 51 should be mounted at least 6 inches (10.24 cm) away from a magnetic compass.



WARNING: *It is the sole responsibility of the owner/operator of the GDL 51 to place this mount and secure the unit so that it will not interfere with the aircraft's operating controls and safety devices, or cause damage or personal injury in the event of an accident or turbulence. Do not mount the GDL 51 where the pilot or passengers are likely to impact it in an accident, collision, or turbulence. The mounting hardware provided by Garmin is not warranted against turbulence, collision damage, or related consequences.*

3.3.2 GDL 51 Mounting

A mounting plate is included to provide a fixed mount inside the aircraft, if desired. The GDL 51 has a rubber pad that keeps the unit from sliding around, if the mounting plate is not used. The GDL 51 may be mounted in a remote location away from the cockpit, but may require the use of an external antenna for best GPS and SiriusXM reception.

1. Locate the proposed mounting position. Ensure that the cabling will reach the required connections with room to secure the cables in a safe manner. Cables may be inserted into the slot in the included suction cup to assist in routing cables.
2. Place the mounting plate in position and mark the location of the four mounting holes.
3. Drill holes for the mounting screws with the appropriately sized bit.
4. Attach the mounting plate with four #8 flat head 100° screws (not supplied).

5. Ensure that the FWD arrow on the serial number tag is pointing in the direction of flight.
6. Insert the GDL 51 into the mounting plate and then push down gently so it snaps into place.

WITH MOUNTING BRACKET

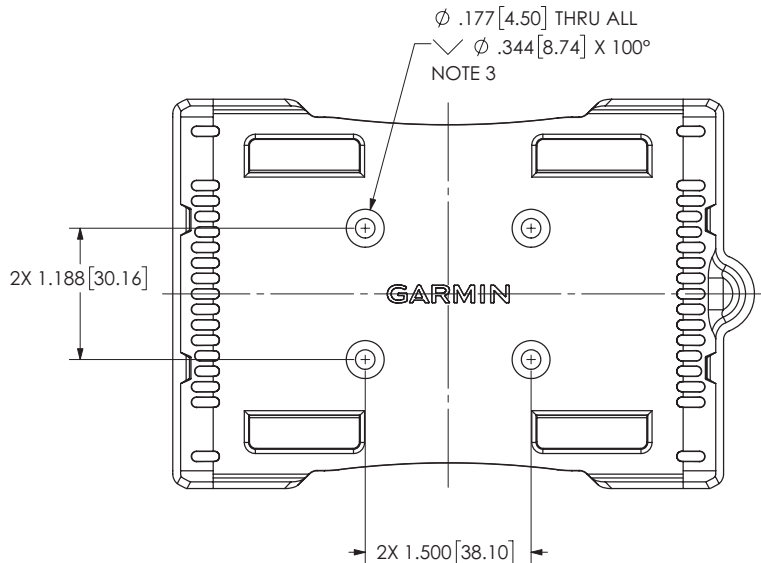


Figure 5 GDL 51 w/Mounting Bracket



4 APPENDIX

4.1 Contact Garmin

If you have questions concerning unit operation or repair, Garmin aviation product support and warranty information can be found at www.flygarmin.com.

When contacting Garmin, please have the following information:

- System configuration (products, antennas, mounting locations, etc.)
- Model No., part number, and serial number
- Software versions
- Description of the problem
- Efforts made to isolate/solve the problem

4.2 Servicing Your Unit

The Garmin GDL 51 has no user-serviceable parts. The GDL 51 is sealed to protect the unit. Any attempt to open the case to change or modify the unit in any way voids your warranty and may result in permanent damage to the equipment.

4.3 GDL 51 Physical Specifications

Operating Temperature Range: -20°C to 60°C (-4° F to +140° F)

Unit dimensions: WxHxD: 4.9" x 1.3" x 3.4" (12.44 x 3.30 x 8.64 cm)

Weight: 0.75 lbs (0.45 kg)

4.4 Software License Agreement

BY USING THE GDL 51, YOU AGREE TO BE BOUND BY THE TERMS AND CONDITIONS OF THE FOLLOWING SOFTWARE LICENSE AGREEMENT. PLEASE READ THIS AGREEMENT CAREFULLY.

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4.5 Battery Information

If these guidelines are not followed, the internal Lithium Ion battery may experience a shortened life span or may present a risk of damage to the unit, fire, chemical burn, electrolyte leak, and/or injury.

- Do not leave the unit exposed to a heat source or in a high temperature location, such as in the sun in an unattended aircraft on a hot day. To prevent damage, remove the unit from the aircraft or store it out of direct sunlight.
- Do not disassemble, puncture, damage, or incinerate the unit/battery.
- When storing the unit for a limited length of time (less than 30 days), store within the following temperature range: -4° to 122°F (-20° to 50°C). When storing the unit for an extended time, store within the following temperature range: -4° to 86°F (-20° to 30°C).
- Do not operate the unit outside of the following temperature range: -4° to 140°F (-20° to 60°C).
- Do not remove or attempt to remove the non-user-replaceable battery.
- Do not immerse or expose unit to water or other liquids.
- Do not use a power and data cable that is not approved or supplied by Garmin.
- Contact your local waste disposal department to dispose of the device in accordance with applicable laws and regulations.

4.6 Product Registration

Help us better support you by completing your online registration today! Have the serial number of your product handy and connect to the Garmin web site (<http://my.garmin.com>). Look for the Product Registration link on the Home page. Also, be sure to record your serial number in the space provided.

To obtain accessories for your unit, please contact your Garmin dealer or visit garmin.com/aviation.

Help us better support you by completing our on-line registration form today! Registration ensures that you will be notified of product updates and new products and provides lost or stolen unit tracking. Please, have the serial number of your unit handy, connect to our web site (www.garmin.com) and look for our Product Registration link on the Home page.

Use the line below to record the serial number in case it is lost, is stolen, or needs service. The serial number is located on the bottom of your unit.

Serial Number: _____

4.7 ACTIVATING A SiriusXM SUBSCRIPTION

SiriusXM offers several subscription options. Go to <http://www.siriusxm.com/sxmaviation> to determine which subscription package is best for your needs.



Before you can activate your SiriusXM subscription, you must have the radio ID. The radio ID is available in the product box, the unit's S/N tag, and on the System Information Page of a connected device. See the owner's manual provided with your device for more information.

1. Contact SiriusXM by phone at (866) 528-7474 or go to <http://care.siriusxm.com> to subscribe.
2. Provide the necessary information to the SiriusXM representative or on the web site to activate your antenna.
3. Verify the functionality of the activated services:
 - For SiriusXM weather, on a connected device, view the Weather Products list and confirm that your subscribed services are listed. See the owner's manual provided with your device for more information.
 - For SiriusXM radio, on a connected device, go to the SiriusXM Audio Page and confirm that radio channels are available. See the owner's manual provided with your device for more information.
4. If the service is not activated within the hour, go to <http://care.siriusxm.com/refresh> or contact SiriusXM by phone at 1-855-MYREFRESH (697-3373).



NOTE: For the unit to receive the SiriusXM signal, it must be powered on, facing skyward, and tuned to channel 1.

4.8 SiriusXM Satellite Radio Service Agreement

4.8.1 SiriusXM Satellite Radio Inc.

Hardware and required monthly subscription sold separately. USER ACKNOWLEDGES THAT GARMIN HAS NO CONTROL OVER THE TERMS AND REQUIREMENTS OF THE SUBSCRIPTION. COMPATIBILITY OF HARDWARE

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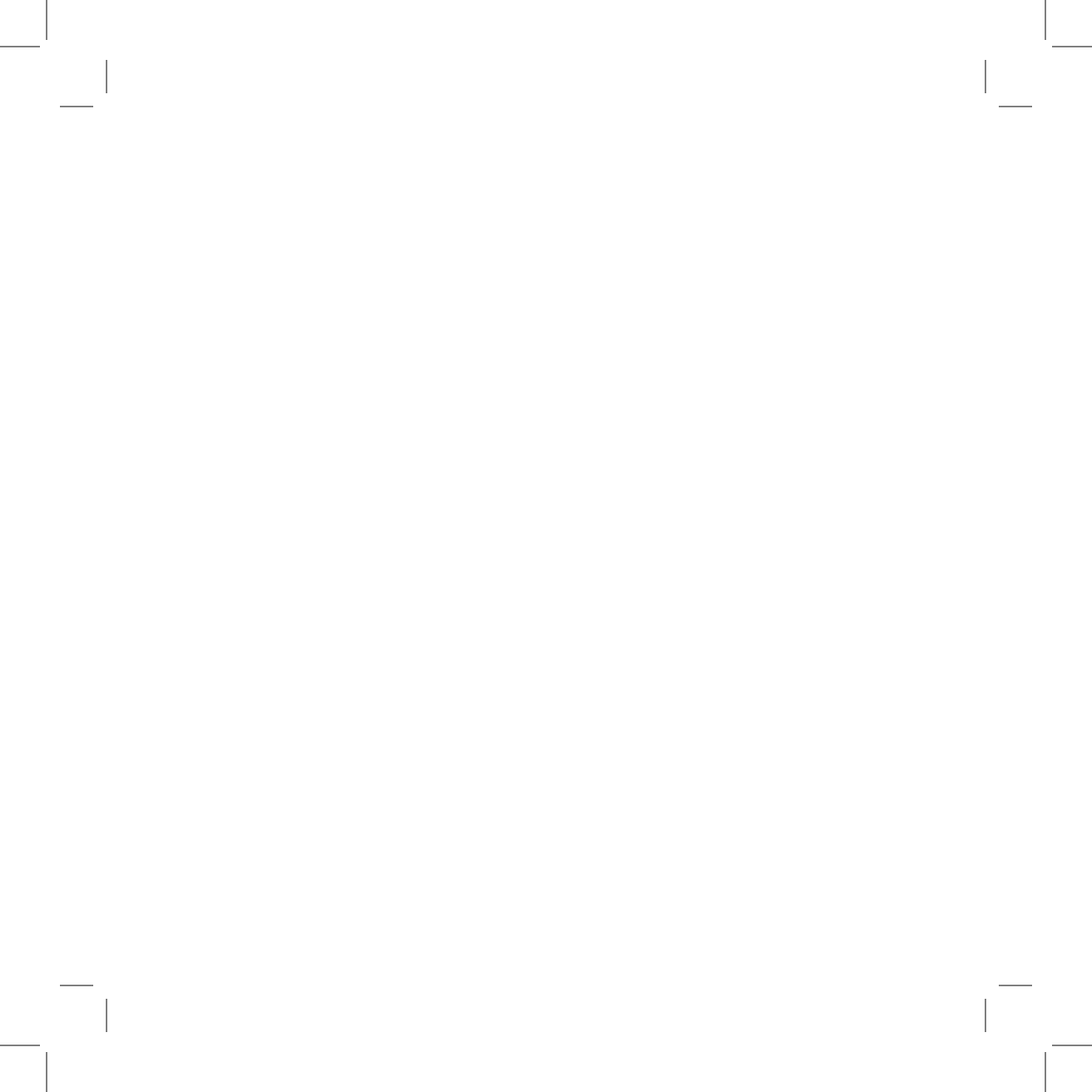
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