

Model No.

**GM-10-SS**  
**GM-10-AS**  
**GM-10-SW**  
**GM-10-AW**

**Attitude & Heading  
Reference System**  
Operating Instructions

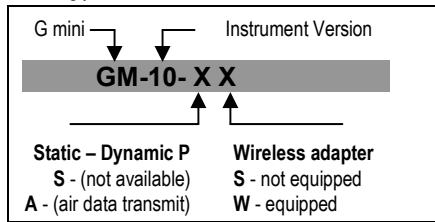
### Dear Customer

Thank you for purchasing this product.

Before connecting or operating, please read these instructions completely. Please keep this manual for future reference.

This product is NOT certified by the FAA and should NOT be used as a primary flight instrument or backup on IFR conditions.

Use the diagram below to determine the capabilities of your instrument and follow installation procedures accordingly.



## System Requirements

### Supplied accessories

**USB Cable:** 5 pin USB Type A to 5 pin mini-USB Type B - M - 3.3 ft

### Power source

- 3.7 rechargeable battery (included) or
- 5V through mini USB (USB cable supplied) or
- 5V through RS-232 PIN1 (cable not included) or
- 8-32V through RS-232 PIN6 (cable not included)

### User Interface

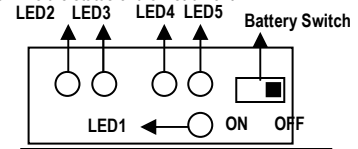
- **Compatible Hardware:** A screen is required to be able to "see" attitude data from the AHRS-G mini. Your display must be equipped with either a standard USB2.0, RS-232 (serial) or wireless network connectivity. Common devices are listed below:

1. Tablet running Windows XP, Vista or 7
2. EFIS-1831 display from Levil
3. iPhone, iPad devices

- **Compatible Software:** The AHRS-G mini is compatible with a number of third party software available for a number of devices including iPhone, iPad and tablet PCs. Check our website [www.aviation.levil.com](http://www.aviation.levil.com) for software compatibility.

## Power ON/OFF

There is a standard Polymer Li-ion rechargeable battery inside the AHRS box. The ON-OFF switch on the side of the unit enables/disables the battery as a power source. You should charge the battery for at least 1 hour before use. The mini USB port will always turn ON the AHRS and recharge the battery as long as it is connected to a standard computer USB2.0 port or a cigarette lighter receptacle even if the battery switch is OFF. Alternatively, 5V on the RS-232 connector PIN1 or 8-32V on PIN6 performs the same function as the USB connection. The LED indicators next to the battery switch can be used to determine the status of the instrument.



LED	ON	OFF
1- AHRS	AHRS ON	AHRS OFF
2- Battery status	Not fully charged	100% charged
3 - Charger	Charging battery	Not charging
	Slow Blink	ON Solid
	ON Solid	Fast blink
4 - Wireless transmitter	IP address OK	Connected over TCP
	Connected over TCP	No IP address

## Connecting Display to AHRS

### - USB (Windows)

- Download the USB driver installation software from the website (USB\_driver.exe)
- Run the software then connect your AHRS to your computer
- Follow the instructions until installation is finished
- Disconnect and reconnect your AHRS to make sure the computer recognizes it and properly assigns a COM port.
- When running your PFD software of choice, check that the COM port used by the PFD is the same as the one assigned by your computer.



### - Wireless Network (Model SW & AW only)

- Turn the AHRS ON and wait for the following network to appear: WiFly-GSX-xx
- Connect your display device to the WiFly network.
- Wait at least 1 minute until the device has established a connection.



- You can now run your navigation software of choice.

### TCP Connection

Make sure your software can connect to the AHRS using Ad-Hoc connection

Host IP 169.254.1.1 Port:2000

## CAUTION!

- This instrument is not meant to be used as a primary flight instrument or backup on IFR conditions
- Ferrous materials inside the aircraft can affect the compass reading.
- Lithium-ion Polymer batteries are volatile. Failure to read and follow the **Safety Instructions** included in your package may result in fire, personal injury and damage to property if charged or used improperly.

### DO NOT:

- Disassemble, remodel, drop, or allow the unit to get wet.
- Use or store in locations directly exposed to sunlight, corrosive gases, or temperatures above 120 °F or below 20 °F.
- Use or store in humid locations.
- Exceed input voltages (5V) through the mini-USB port or PIN1
- Connect PIN9 or PIN4 to GND or a power supply. PIN4 & PIN9 can only be used for a remote battery switch and may damage the battery if used improperly.
- Leave instrument unattended when charging battery

## Installation Instructions

There will be an airplane drawing next to an arrow on the top of the AHRS-G mini as shown below. It should point towards the RS-232 connector on the front of the instrument.:



1. Align the arrow with the roll axis of the aircraft.
2. The label should face up.
3. Install AHRS straight and level, as far away from ferrous metals as possible.

4. Secure it tightly to a flat surface reducing any room for vibration. For optimal results, position the box as close as possible to the center of the aircraft.

### Model AS & AW only:

5. Connect static and dynamic pressure lines from the pitot static system to the AHRS' static and dynamic pressure connectors. (1/8" NPT - F hose connectors not included)

### Hard-Wiring the instrument (using RS-232 connector)

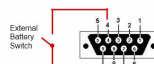
To be performed by qualified personnel on qualified aircrafts only!

1. Connect PIN5 to GND.
2. Connect power source accordingly to either PIN1 or PIN6 of the RS-232.

PIN1 5V only!	AHRS ON, recharges battery
PIN6 8-32V	AHRS ON, recharges battery

3. Make sure the battery switch on the side of the instrument is OFF. Leaving the switch ON will cause the battery to be continuously drained after flight and then recharged on the next flight, reducing battery life.

4. For emergency purposes, if the battery switch on the AHRS is not easily accessible, it is recommended to install a remote switch that the pilot can use to control the battery. Use a normally open switch to connect PIN4 (Battery) with PIN9.



### Performance

When the AHRS is turned on, it requires a two minute interval to calibrate itself. To achieve better performance, it is recommended that the aircraft stays in a steady position (or taxiing) during this two minute period. During flight, the instrument utilizes the indicated airspeed from the pitot-static for roll and pitch calculations. If your instrument is not connected to the dynamic pressure, the AHRS will "estimate" the speed of the aircraft. In order to better estimate the speed, a +15 deg bank turn to the left for 10 seconds, then a +15 deg bank turn to the right is recommended at the beginning of each flight. Power off/on during flight will not damage the instrument even at an unusual attitude. Continue...

...There are no flight limitations to the AHRS-G Series. The instrument will operate in a full 360 degrees of turn and may be used in light aerobatic type maneuvers. Extreme turns may cause the instrument to temporarily disable itself (200 degrees/sec max turn rate). This is indicated by a "flashing" behavior (pitch goes from 0->90 degrees, and roll from 0->180degrees). The instrument automatically resets itself within 4 seconds if kept steady during that time, otherwise the instrument will recover within 15-40 seconds. This will not cause any harm to the instrument.

## Specifications

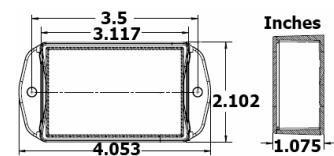
**OUTPUT** Roll, pitch, magnetic heading, inclination, turn coordinator, G-meter, battery %.

**Model No. GM-10AS & AW only:** Pressure altitude, indicated airspeed, vertical speed.

**Power consumption** 0.29 Amps at 5V

**Weight** GM-10SS & SW 5oz  
GM-10AS & AW 8oz

**Temperature Range** 0 - 70 Celsius (32 - 158 F)



### RS-232

- 1 - 5V IN
- 2 - Transmit (115200 baud)
- 3 - Receive (from host)
- 4 - Remote Battery switch
- 5 - GND
- 6 - 8-32V IN
- 7 - Not available
- 8 - Not available
- 9 - Remote Battery Switch

## Contact us

For more information about this product contact us at

**Phone:** 407-542-3971  
**Email:** info@levil.com  
**Website:** www.aviation.levil.com