



iLEVIL

SPORT

Wireless Integrated Avionics Module
AHRS, GPS, Data recording

Instruction Manual



iLevil Sport

Anatomy



Package Contents

- / Wireless iLevil sport
- / USB to Mini USB cable
- / Rubber stoppers or rubber pad
- / Protective bag

Charge Before Use

- / Fully charge the iLevil using the USB cable supplied.
- / The LED next to the USB port indicates whether the device is charging.
- / When the LED goes off, the battery is fully charged. (It may take up to 4 hrs.)
- / 100% charged battery supplies power for about 5 hrs.
- / The Solar Panel recharges the batteries when exposed to sunlight, extending battery charge during flight for approximately 1 hr.
- / Solar panels DO NOT recharge the battery when the iLevil is OFF and exposed to sunlight.



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Alignment

- Find a location that will allow your iLevil Sport to have a clear view of the sky for GPS satellite reception
- Align the iLevil's top label with the roll axis of your aircraft. ON/OFF switch should face the back of the aircraft. Solar cells facing up.
- Install iLevil on a surface that is LEVEL with the horizon DURING un-accelerated, straight and level flight. It's ok if it isn't level on the ground (i.e. in tail draggers).

NOTE: An optional RAM suction cup mount is available on the website with swivel base for ease of installation.

- You may use our free AHRS Utility App available on the AppStore/Playstore, or any other compatible App with a horizon display to assist you with leveling the instrument. For iLevil's purchased after August 2018, caging capabilities are available using the AHRS Utility App.
- For optimal magnetic heading, install iLevil as far away from ferrous metals as possible. (i.e. magnetic compass, cell phones, steel airframe)
- Turn on by flipping the ON/OFF switch. GPS LED will light.

NOTE: **DO NOT** rely on the iLevil for attitude & heading if it is not aligned as specified.



iLevil Sport

Connecting to your Favorite App

The iLevil series offers the most compatibility with Apps on both iOS and Android platforms.

- / Turn ON your iLevil by flipping the ON/OFF switch. (LEDs will light up)
- / Tap Settings icon on your tablet
- / Tap WIFI and connect to the iLevil – xxxx network, where “xxxx” is your unique serial number
- / Once your connection is established, a checkmark will appear next to the network name
- / Run the Navigation App of your choice

The AHRS Utility App is a free application available for iPad/iPhone and Android devices for iLevil troubleshooting, Alignment aid, Configuration etc.

Other advanced Apps may require subscriptions and offer more features than others. Some Apps may not support all the features of the iLevil. You may choose to use one Nav App or a combination of Apps on multiple devices depending on your flying needs.

NOTE:

- / For a complete list of compatible apps visit www.LevilAviation.com
- / To download a compatible App to your iPad/iPhone search using the AppStore on your tablet
- / To download a compatible for your Android tablet search using the PlayStore on your tablet



iLevil Sport

LED Indicator

Label	Status	Description
Power/GPS	Slow Blink Green: Solid Green: Off:	Power ON / No GPS Fix Power ON / GPS fix acquired Power Off
Charging (with external power)	Solid Green: Off (w/ power): Off (no power):	Charging Battery 100% charged, not charging Not charging

NOTE:

iLevil has a charging temperature protection. If the battery is above 40°C (104°F) and the iLevil is connected to external power, the iLevil will continue to operate from external power but the charging process will be disabled. The charging LED status will be set to OFF.



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Magnetic Heading

There are two ways to obtain heading information from the iLevil, depending on the navigation App of choice, you may choose between the following:

- / True Track: Heading information based on GPS track.
- / Magnetic Heading: Heading information determined by a combination of a 3-axis magnetometer and gyros that form part of the internal AHRS.

When using Magnetic Heading, it is important to know the following:

- / Magnetic fields caused by other Magnetic Compass etc., may affect the AHRS heading
- / Verify your magnetic heading after following alignment and installation procedures: AHRS Utility App → options → Heading → Use magnetic
- / In case of magnetic deviation, the internal AHRS will slowly learn your aircraft configuration during flight to compensate for errors. This learning process requires the aircraft to turn both clockwise and counter clockwise for at least 40 seconds. After turning, or at the end of your flight, verify the magnetic heading again using the AHRS Utility App. If the AHRS was able to successfully compensate for errors, you may store this data inside the iLevil and use this configuration on the next power cycle: AHRS Utility → Device Config → Enable Configuration → Save Mag Data
- / If the AHRS was unable to compensate for errors after turns, try using a different location for installation
- / ERASE Magnetic data using AHRS Utility before attempting a different location or moving iLevil to a different aircraft or environment



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Specifications

/// AHRS

- 360 degree pitch and bank operation
- GPS Independent attitude
- 300 deg/sec max turn rate
- 4Gs max rating
- Output: Roll, pitch, magnetic heading, slip indicator, rate of turn, G meter

/// GPS

- Supports WAAS
- Cold Start < 60 sec. (open sky)
- 1 Hz output (5Hz optional)

/// WIFI

- Android and iOS compatible
- Supports up to 10 devices connected simultaneously (UDP broadcast)
- Supports multiple protocols:
 - GDL90 (default)
 - NMEA

/// Internal Battery

- Operating time: <= 5 hrs. typical (no sunlight)
- Charging time USB - approx.. 4 hrs.



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Environmental Requirements

- / Temperature range: -10° to 40 ° C (14 ° F to 104 ° F)
- / Clear view to sky for best GPS reception
- / Windshields with integrated heating elements will attenuate GPS

Caution

- / Ferrous materials inside aircraft affect the magnetic compass reading
- / This product contains a Lithium-Ion battery; Li-Ion batteries are volatile
- / Failure to read and follow **Battery Safety Instructions** may result in fire, personal injury and property damage
- / The iLevil will get hot after it's been running in direct sun; don't leave the iLevil ON or OFF parked on the ramp in the hot sun; **Use caution!**
- / AHRS/GPS data provided is not FAA certified. Do not use it as a primary instrument for IFR



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Serial Port

The iLevil Sport features a serial port that can be used for data transfer or 5V external power input for automatic ON/OFF operations. For more information Check the iLevil Relay feature on our website.

Battery Safety Instructions

- / Batteries only have about a 30% charge when you receive your iLevil 3 SW
- / **Never charge batteries unattended.** When charging Lithium-Ion Batteries, you should constantly monitor the charging process to be able to respond to any problems that may occur
- / Always let batteries cool down to ambient temperature before charging
- / Charge batteries in a safe area away from flammable materials
- / Do not expose your device to direct sunlight (heat) for extended periods while operational
- / When transporting or temporarily storing in an airplane or vehicle, temperature range should be no less than 20 ° F(-12 ° C) and not more than 150 ° F (65 ° C)
- / Storing Lithium-Ion batteries at temperatures higher than 170 ° F for extended periods of time (more than 2 hrs.) may cause damage to battery and possible fire
- / **Short Circuits can cause fires!** If you accidentally short the battery, it must be placed in a safe observation area for approx. 15 mins. Nevertheless, for safety, the unit is protected by a 2 amp fuse which will blow if any component is shorted or when overcharging the battery.
- / DO NOT disassemble, remodel, drop, or let the iLevil get wet!



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Data Recording (SD Card)

- / The iLevil starts recording your flight automatically when an SD card is inserted on the SD slot and the iLevil has acquired a GPS fix
- / The name of the file saves in the following format: iLevilRecordingYYYYMMDD_HHMMSS.csv
- / Data is recorded in comma separated values (.csv), easy to read on excel
- / Instructions on SD Card data recovery using different software can be found on www.levilaviation.com

Helpful Tips

- / If you encounter WIFI connection problems, try resetting the tablet's WIFI (disable/enable)
- / You may use our free AHRS Utility App to see battery percent, GPS signal power, etc.
- / Do Not switch the iLevil ON/OFF button swiftly when resetting power to the iLevil. When turning OFF the iLevil, wait for it to complete the shut down sequence. Make sure the LEDs go OFF before turning iLevil ON again.
- / The internal AHRS has a max rate of turn of 300 deg/sec. Most likely you will exceed this limit (or “tumble” it) when playing with the iLevil in your hands. If this is the case, and the AHRS did not recover, you may “tumble” it again, and set it on a level surface. It will recover within 4 sec.



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Warranty

Levil Aviation warrants this product to the original purchaser to be free from defects in material and workmanship for a period of one year from the date of the original purchase. The following are not covered: software, damage resulting from accident, neglect, misuse, improper voltage supply or failure to follow operational guidelines supplied with this product.

Please register your product online at: www.levilaviation.com

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