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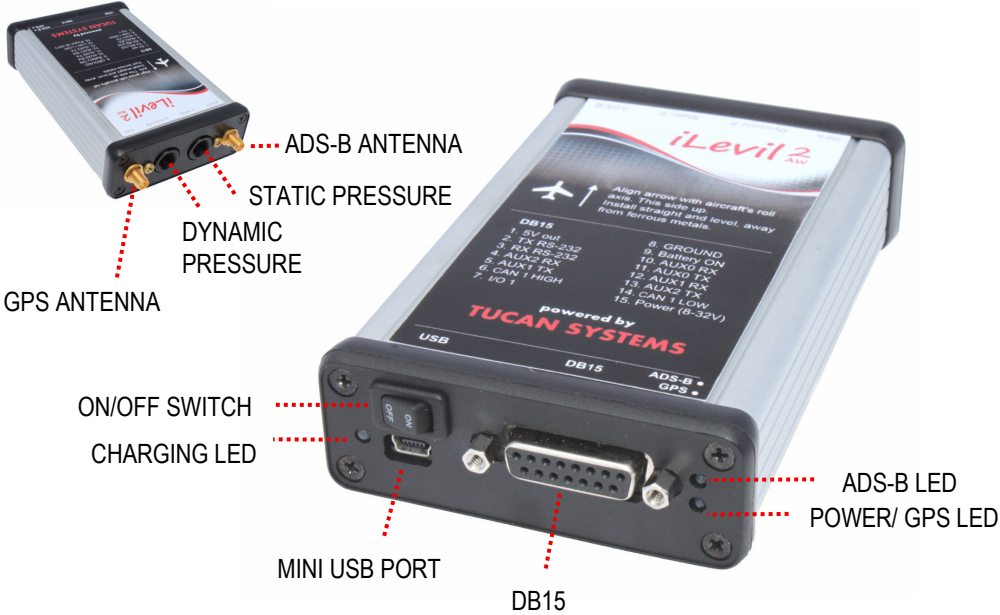
# *iLevel*<sup>2</sup><sub>AW</sub>

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**Wireless Integrated Avionics Module**  
AD-AHRS, GPS, ADS-B 978 / 1090 MHz Receiver

**Instruction Manual**

# iLevel 2 AW



## *Package Contents*

- Wireless iLevil2 AW
- USB to Mini USB cable
- ADS-B Antenna
- GPS Antenna
- DB15 male connector
- User Manual

## *Charge before use*

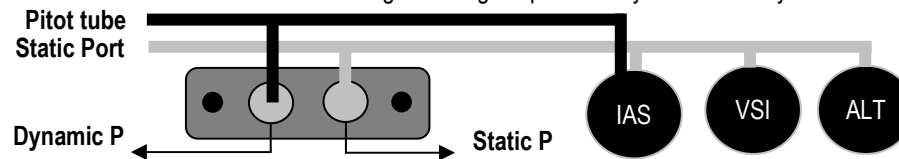
When using the iLevil AW as a "portable" device, you must first charge the internal batteries:

- Charge the iLevil2 AW fully using the USB cable and dual 12V car charger supplied.
- You may use the 1amp socket for the iLevil and the 2amp socket for your tablet.
- The LED next to USB port indicates if the device is charging.
- When the LED goes off, the battery is charged. (Takes up to 4 hrs.)
- 100% charged battery supplies power for 5 hrs.

When connected to (12-28V) through the DB15 plug (Pin15), the batteries will be charged automatically with external power.

## Alignment

- Attach the supplied ADS-B antenna and GPS antenna. See top label for reference.
- Align the airplane icon on the iLevel's top label with the roll axis of your aircraft. ON/OFF switch should face the back of the aircraft. Pressure ports and Antenna connectors should face the front.
- Install iLevel 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). You may use our free AHRS App available on the AppStore to assist you with leveling the instrument.
- For optimal magnetic heading, install iLevel far away from ferrous metals as possible. (i.e. magnetic compass, cell phones, steel airframe)
- To connect to the pitot-static system, you need two 1/8 NPT hose fittings for your specific hose size. Connect the static line to the "static P" port and the dynamic line to the "Dynamic D" port. Teflon is recommended when installing the fittings to prevent any leaks in the system.



- Install the end of the GPS antenna with a clear view of the sky and the ADS-B antenna with line of sight to ground towers and nearby aircrafts.

NOTE: **DO NOT** rely on the iLevel for attitude & heading if it was not aligned as specified above.

## Connecting to your favorite App

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

- Turn ON your iLevel by flipping the ON/OFF switch. (LEDs will light up)
- Tap Settings icon on your tablet.
- Tap WiFi and connect to the iLevel2 – xxxx network, where “xxxx” is the unique serial number.
- Once your connection is established, a checkmark will appear next to the network name.
- Run your Navigation App of choice.

The AHRS Utility App is a free application available for iPad/iPhone for iLevel 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 iLevel. 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 go to [www.aviation.level.com/compatible-apps](http://www.aviation.level.com/compatible-apps)
- 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
- To use your iLevel2 in combination with ForeFlight, please see instructions at: [www.aviation.level.com/ForeFlight](http://www.aviation.level.com/ForeFlight)

## LED Indicators

Label	LED	Status
Power/GPS	Slow Blink Green: Solid Green: Off:	Power ON / No GPS Fix Power ON / GPS fix acquired Power Off
ADS-B	Slow Blink Green: Solid Green: Off:	Traffic Received Weather and traffic received No traffic or Weather received
Charging (with 5V USB power)	Solid Green: Off (w/ power): Off (no power):	Charging Battery 100% charged, not charging Not charging
Charging (with ship's power on Pin15)	No Charging Status available.	

NOTE: iLevel2 has a charging temperature protection. If the battery is above 40°C (104°F) and the iLevel2 is connected to external power, the iLevel2 will continue to operate from external power but the charging process will be disabled. The charging LED status will be set to OFF.

## Magnetic Heading

There are two ways to obtain heading information from the iLevel, 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 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:  
(use 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. 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 iLevel and it will use this new configuration on the next power cycle:  
(AHRS Utility -> Device Config -> Enable Configuration -> Save Mag Data).
- If AHRS was unable to compensate for errors after turns, try using a different location.
- ERASE Magnetic data using AHRS Utility before attempting a different location or moving iLevel to a different aircraft or environment.

## 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, Indicated Airspeed (kts), Vertical Speed (ft/min) Pressure Altitude (at 29.92 inHg)

### Internal Battery

- Operating time: <= 4 hrs. typical
- Charging time: USB - aprox. 4 hrs.

### ADS-B in (978/1090 MHz)

- Receives regional and continental NEXRAD reports broadcasted by ADS-B towers within range: (Regional every 2.5 min. / Continental every 15 min.)
- Receives "GROUND TO AIR" traffic. (re-broadcast of traffic by ADS-B towers nearby)
- Receives AIR TO AIR" traffic reports from other aircraft operating 978/1090 Mhz transmitters: (978 MHz UAT ADS-B out and Mode-ES transponders with extended squitter)

### WIFI

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

### GPS

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



## *Environmental requirements*

- Temperature range: -10° to 40 ° C (14 ° F to 104 ° F).
- Clear view to sky for best GPS reception.
- For best ADS-B reception line of sight view with ADS-B ground based towers and min 2000 ft.
- Windshields with integrated heating elements will severely attenuate GPS and ADS-B signals.

## *Caution*

- Ferrous materials inside aircraft affect the compass reading
- This product contains a Lithium-Ion battery. Li-Ion batteries are volatile.
- **Never charge batteries unattended.** When charging Lithium-Ion Batteries, you should always constantly monitor the charging process to be able to respond to any problems that may occur.
- 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.
- DO NOT disassemble, remodel, drop, or let the iLevel2 get wet!
- Not all traffic is displayed using ADS-B in. Most aircraft are not currently ADS-B Out equipped and therefore not detectable by the iLevel. Do not use the iLevel as an anti-collision system.
- AHRs/GPS data provided is not FAA certified. Do not use it as a primary instrument for IFR

## Levil Data Relay

The iLevil2 AW features three RS-232 serial ports that can be used for data transfer between tablets and other avionics in the cockpit. For more information check the iLevil Relay feature on our website.

## DB15 pin description

**PIN 1:** 5V IN or 5V out when using external Power on Pin15 (8-32V)

**PIN 2:** RS-232 Data transmission (230400 bauds)

**PIN 3:** RS-232 Data reception (230400 bauds)

**PIN 4:** AUX Relay port 2 RX (receive)

**PIN 5:** AUX Relay port 1 TX (transmit)

**PIN 6:** CAN 1 High (for future use)

**PIN 7:** Input/Output 1(for future use)

**PIN 8:** GROUND

**PIN 9:** Battery ON, connect this pin to GND using a remote switch to turn ON iLevil using internal battery, overriding the on-board power switch)

**PIN 10:** AUX Relay port 0 RX (receive)

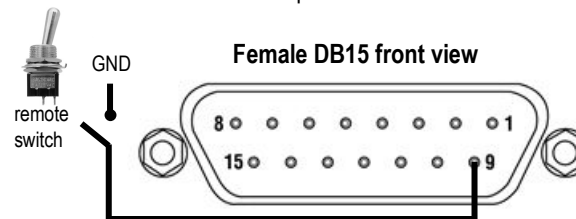
**PIN 11:** AUX Relay port 0 TX (transmit)

**PIN 12:** AUX Relay port 1 RX (receive)

**PIN 13:** AUX Relay port 2 TX (transmit)

**PIN 14:** CAN 1 Low

**PIN 15:** Power (8-32V), use 1 amp Fuse for protection.



## Helpful Tips

- You can upgrade the firmware on your iLevil2. We are always integrating new and exciting features, so check the website for firmware updates.
- We are always innovating! Stay up to date with Levil developments and App integrations by filling out the Warranty registration card and check the “sign me up for newsletters” checkbox.
- iLevil2 AW comes with a standard ADS-B antenna, however, external antennas are also available on our website for remote mount applications: [www.shop.levil.com](http://www.shop.levil.com)
- If you encounter WiFi connection problems, try resetting the tablet's WiFi (disable/enable)
- To save battery and reduce load, try using the tablet in “Airplane Mode” and enable WiFi only.
- If using Apple devices, you may use our free AHRS Utility App to see battery percent, GPS signal power, ADS-B diagnostics etc.
- Do Not switch the iLevil ON/OFF button swiftly when resetting power to the iLevil. When turning OFF the iLevil2, wait for it to complete the shut down sequence. Make sure the LEDs go OFF before turning iLevil ON again.
- ADS-B weather and re-broadcast of traffic is provided within the United States only.
- In most locations, it is not possible to receive ADS-B information from ground towers unless you are airborne (typically above 2000 feet) with line of sight to the tower.
- 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.
- Pressure Altitude is sent at 29.92 inHg. You must enter the correct altimeter setting on the App side to compensate for barometric pressure changes.

## Warranty

Levil Technology Corp. 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, or by filling out the product registration form enclosed.

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