Imporatant safety & disposal information

Please read these safety instructions carefully before using your Mercury V1 altimeter. Retain this information for future reference.

Intended Use

The Mercury V1 is a barometric altimeter and data logger designed for use in unmanned model rockets and high-power rockets. It is not designed or certified for use in manned aircraft, safety-critical systems, or any application where failure could result in injury or loss of life. Do not rely on this device as a sole safety system.

Sensor Accuracy

The Mercury V1 uses barometric pressure to calculate altitude. Altitude readings are approximate and can be affected by weather conditions, atmospheric pressure changes, temperature, and sensor drift. Do not treat altitude values as exact measurements. If output rules are configured to trigger at specific altitudes, allow an appropriate safety margin to account for sensor variation.

Tilt angles, roll, pitch, and yaw are calculated from an IMU fusion of gyroscope and accelerometer readings. Once calibrated, these readings are accurate under most conditions, however they are not infallible. Small errors can accumulate over time during flight, and rapid or sustained motion may introduce temporary inaccuracies. If using tilt or orientation data to trigger output rules, allow an appropriate margin of error and do not rely on precise angular thresholds for safety-critical functions.

Battery Safety

This product contains a rechargeable lithium polymer (LiPo) battery with an internal protection circuit module (PCM) that provides overcharge, overdischarge, and overcurrent protection independent of the altimeter's charge management circuitry. To reduce the risk of fire, burns, or battery damage:

- Charge the altimeter using a standard USB-C cable only. Do not use damaged or frayed cables.
- If the device is warm from use in WiFi mode, switch it off before charging. WiFi operation raises the internal temperature by approximately 25°C, and charging a warm battery accelerates wear and increases risk.
- Do not charge the battery below 0°C or above 45°C.
- Do not leave the device charging unattended for extended periods.
- Do not puncture, crush, disassemble, or expose the battery to fire or extreme heat.
- Stop using the altimeter immediately if the battery appears swollen, deformed, or is emitting heat or odour, and dispose of it safely at a battery recycling point.
- Always install the altimeter in its protective nylon case or in the Rocketry Ltd accessory mount when flying. These enclosures protect the LiPo cell from impact damage during flight and recovery. Flying the bare PCB without a protective enclosure is not recommended as it leaves the battery exposed to potential puncture or crush damage.

Charging

The Mercury V1 charges via USB-C. The onboard charge controller manages the charging process automatically. The charge LED illuminates while charging and turns off when charging is complete. There is no need to monitor the charging process, but do not charge in extremely hot or cold environments.

It is good practice to fully charge your altimeter before each flying session, particularly if you are using the output channels to control flight events or recovery deployment. A low battery during flight could cause the altimeter to shut down before completing its programmed functions.

Outputs and Pyrotechnic Safety

The Mercury V1 features configurable output channels and rules that can be used to trigger external devices such as ejection charges, igniters, or deployment mechanisms. These are secondary functions of the altimeter. Before using any output for a critical or energetic function, you must:

- Satisfy yourself that the altimeter is suitable for your intended application and that the output rules are correctly configured.
- Test your output configuration thoroughly with non-energetic loads before use with pyrotechnic devices.
- Configure your output rules so that no trigger can activate until after launch is detected and the rocket has reached a suitable altitude above the launch pad. This provides a safety margin against accidental activation on the ground.
- The altimeter includes a configurable arming altitude and arming time (default: 100 metres and 3 seconds). Output rules will not activate until the rocket has been continuously above the arming altitude for the specified duration. This prevents accidental triggering from ground-level events such as pressure changes when removing a nosecone, brief sensor fluctuations, or handling the rocket. It is strongly recommended to leave this feature enabled and to set the arming altitude to a safe height above the launch area.
- **Never connect a pyrotechnic charge, igniter, or any energetic device to the altimeter until the rocket is on the launch pad and the altimeter is powered on and in its ready state.** Although the altimeter is designed to hold all outputs inactive during startup, this practice provides an additional layer of safety against unintended activation in the event of a fault.

Rocketry Ltd accepts no liability for damage, injury, or loss arising from the use of the output channels. It is the user's responsibility to ensure that all pyrotechnic and deployment systems are handled, connected, and used safely and in accordance with applicable regulations.

Output Electrical Limits

Do not exceed the rated current of the output channels. Connecting devices that draw current beyond the specified limits may damage the altimeter and void your warranty. Refer to the specifications page for maximum output current ratings.

Recovery System Redundancy

If using the Mercury V1 to deploy a recovery system such as a parachute or streamer via ejection charge, it is strongly recommended to use a backup deployment method. Never rely solely on a single electronic device for the safe recovery of your rocket. A failure of any electronic component, wiring, or connection could result in a ballistic descent. The use of redundant recovery systems, such as a secondary altimeter or a motor ejection charge, is considered best practice in model and high-power rocketry.

Operating Environment

- Operating temperature: -10°C to 50°C. The altimeter will shut down automatically if the internal temperature exceeds 60°C to protect the battery and components.
- Do not expose the altimeter to water, rain, or excessive moisture.
- Do not use the altimeter in environments with corrosive gases or liquids.
- Avoid prolonged exposure to direct sunlight when not in use.

Children and Young People

This product is not designed to be used by children under the age of 16 without adult supervision. Use of this product involves configuring electronic systems, handling model rocket components, and may involve pyrotechnic devices. An account on altimetercloud.com is required for full functionality, including cloud upload and remote settings management. Where the output channels are used in conjunction with pyrotechnic charges, igniters, or any other energetic devices, the product must not be operated by anyone under the age of 18.

WiFi and RF Exposure

The Mercury V1 transmits on the 2.4 GHz band using WiFi and ESP-NOW protocols. Transmit power does not exceed 20 dBm EIRP, which is well within regulatory limits for general public exposure. No special precautions are required for RF exposure during normal use.

Local Regulations

The user is responsible for complying with all applicable local, national, and international laws and regulations regarding model rocketry, high-power rocketry, and the use of pyrotechnic devices. Regulations vary significantly by country and region. Rocketry Ltd makes no representation that the use of this product is lawful in any particular jurisdiction and accepts no liability for any breach of local regulations by the user.

Modifications

Any modification to the hardware, firmware, or software of the Mercury V1 that has not been authorised by Rocketry Ltd will void all warranties and may invalidate the product's regulatory compliance certifications. The device has been tested and certified as supplied. Unauthorised modifications may also create safety hazards.

Third-Party Accessories

Rocketry Ltd is not responsible for any damage, malfunction, or safety hazard caused by the use of non-genuine accessories, cables, batteries, or components. Use only accessories and replacement parts recommended or supplied by Rocketry Ltd.

Disposal and Recycling

This product is electrical and electronic equipment and must not be disposed of with general household waste.

The crossed-out wheelie bin symbol on the product indicates that it falls within the scope of the Waste Electrical and Electronic Equipment (WEEE) Directive. At the end of its useful life, please dispose of this product at an appropriate collection point for the recycling of electrical and electronic equipment, or return it to the retailer when purchasing equivalent new equipment.

To find your nearest recycling point:

- **United Kingdom:** Visit recycleyourelectricals.org.uk for a recycling locator with nearly 30,000 drop-off locations across the UK.
- **European Union:** Contact your local municipality or visit your local household waste recycling centre. Most EU member states provide free collection points for small electrical equipment.

The lithium polymer battery contained within this product must be recycled separately. Many local authorities and retailers provide battery recycling facilities. Do not dispose of the battery in general waste or by incineration.

WEEE Producer Registration: WEE/MM6411AA

Correct disposal helps protect the environment and human health from potential hazards arising from uncontrolled waste disposal, and supports the recovery and recycling of materials.

Questions or Concerns

If you are unsure whether the Mercury V1 is suitable for your intended application, or if you have any questions about configuring the altimeter safely, please contact us at info@modelrockets.co.uk before flying. If you have any doubt about your configuration, your wiring, or the suitability of the altimeter for your rocket, do not fly until your concerns have been resolved.