

AIM USB 1.2 Manual

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1 Introduction

Thank your purchasing the AIM USB altimeter. You will find that this altimeter is a “it just works” device. By making use of a USB connection to a PC or laptop, all that is left to do in the field is switch the device on. No setting of jumper switches! With a USB connection come many more useful features. These will be described later.

2 Intended Versions

- Hardware v1.2x
- Firmware v1.42
- Software v1.40

It is recommended that you always use the correct manual for your hardware and firmware version. If your hardware or firmware is of an earlier version, diagrams etc. may differ.

3 Hardware Features (v1.20)

3.1 Changes since the last release

None. This is the first commercial hardware release.

3.2 Features

- Small form factor: 95mmx25mmx15mm (L x W x H)
- Operation from 6 volts to 14 volts.
- Powerful micro-controller running at 16 MHz.
- Maximum MSL value of 44000 feet.

- AGL precision of $< \pm 6$ meters at MSL (Calibrated to within 50m).
- AGL precision of $< \pm 50$ meters at maximum MSL (Calibrated to within 50m).
- AGL accuracy error is \ll AGL precision because of differential measurements.
- Completely self powered when connecting to a PC or laptop.
- Two lines for firing ejection charges.
- Powerful 4 amp (continuous) MOSFETs.
- Large capacitor to make sure the device doesn't reset when firing lines.

4 Firmware Features (v1.41)

4.1 Changes since the last release

Modified the “beep out” of altitudes to be more accurate.

4.2 Features

- Completely upgradable firmware, making sure you always have the latest!
- Least squares apogee detection.
- Over 6 minutes total flight time.
- Over 1:30 minutes per flight.
- Connect to a PC or laptop to download flight profiles and modify settings.
- Beeps out AGL value upon detecting an “end of launch” event.
- Data stored at 0.1 second intervals.
- Data is stored in non-volatile flash memory.
- Stores data indicating which lines were fired. This can be viewed using the software provided.

5 Software Features (v1.40)

5.1 Changes since the last release

- Added the ability to emulate a launch. This is a great test to see if all your settings are correct etc. You can even test if the battery is powerful enough to fire the ejections!
- Added some more control features allowing current pressure and altitude to be read for example.

5.2 Features

- Upgrade your firmware using this software.
- Complete integration with your altimeter.
- Download and export profiles to MS Excel.
- Generates smoothed graphs of both AGL altitude and velocity (kph) using dynamic moving averages.
- Dynamic moving averages ensures all crucial features of your data is preserved.
- Indicates which lines were fired and when! This is very useful.
- Allows settings to be changed on your device.
- Launch emulation allows for testing of device before launch.
- Pressure and altitude can be read from software.
- Ejection lines can be triggered from software.
- Battery voltage can be read from software.