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wAltimeter

TECHNICAL REPORT

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1. Introduction

In the absence of real-time altitude measuring devices (*altimeter*) for a rocket modeling competition, **PR-DC** engineers have developed **wAltimeter**, an atmospheric pressure based altitude measuring device with real-time radio transmission of data.

2. Technical characteristics

Table 1 - *Technical characteristics of device*

Main characteristics	
Length	23.8 mm
Width	14.6 mm
Input voltage	3.7V DC (1S LiPo Battery)
Preassure range	300 - 1100 hPa
Data transmission	
Radio frequency	868 MHz
Range	up to 5000 m
Data rate	up to 40 Hz
Microcontroller	
Operating frequency	72 MHz
Mode signaling	2 LEDs
External memory type	Flash

3. 3D Model and photos

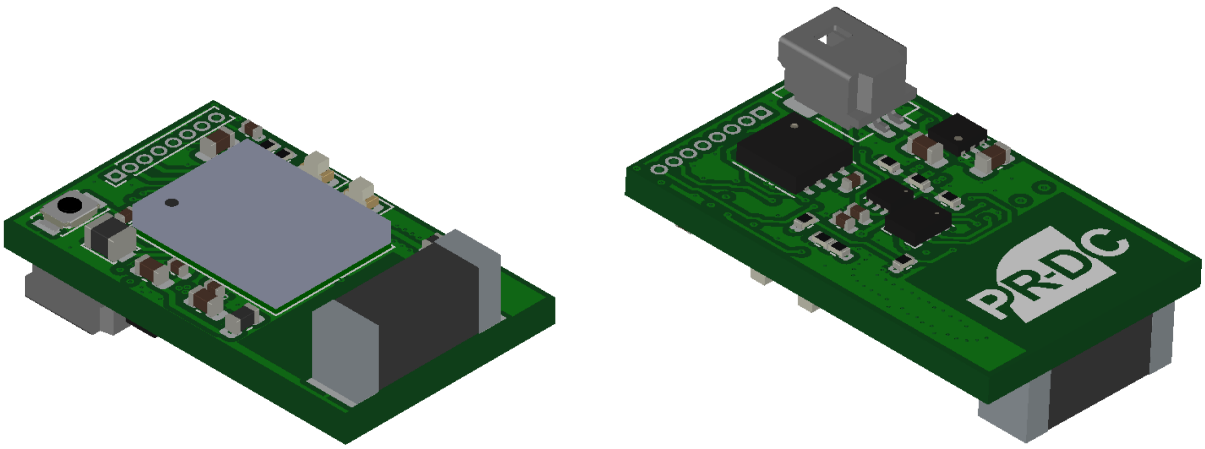

Figure 1 - *Device 3D Model*

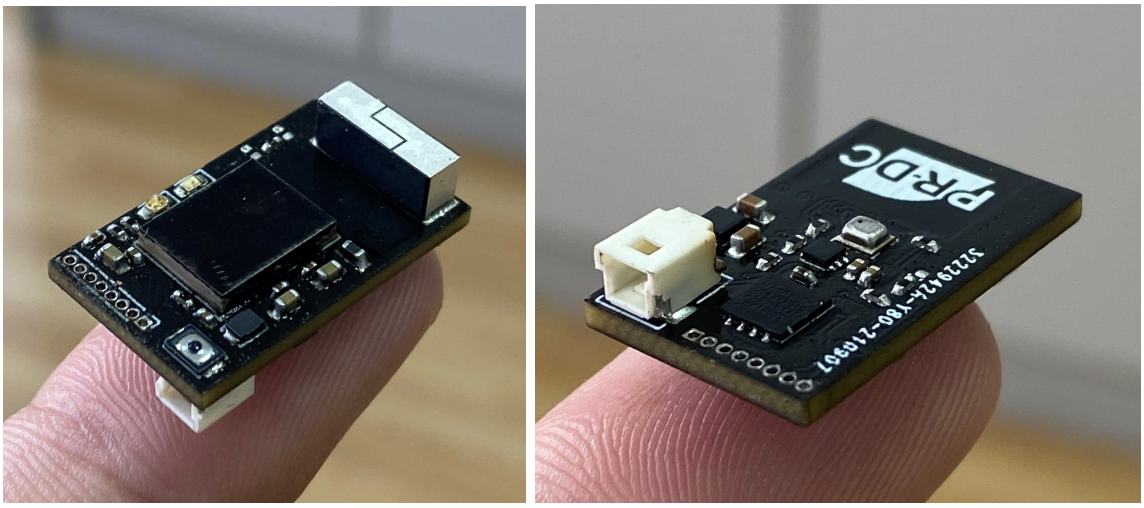

Figure 2 - *Device photos*

4. Device testing

At 2021 FAI S World Championships for Space Models, tests with several rocket motors were conducted. Change of altitude during rocket flights using category B and C rocket motors is shown on following diagrams.

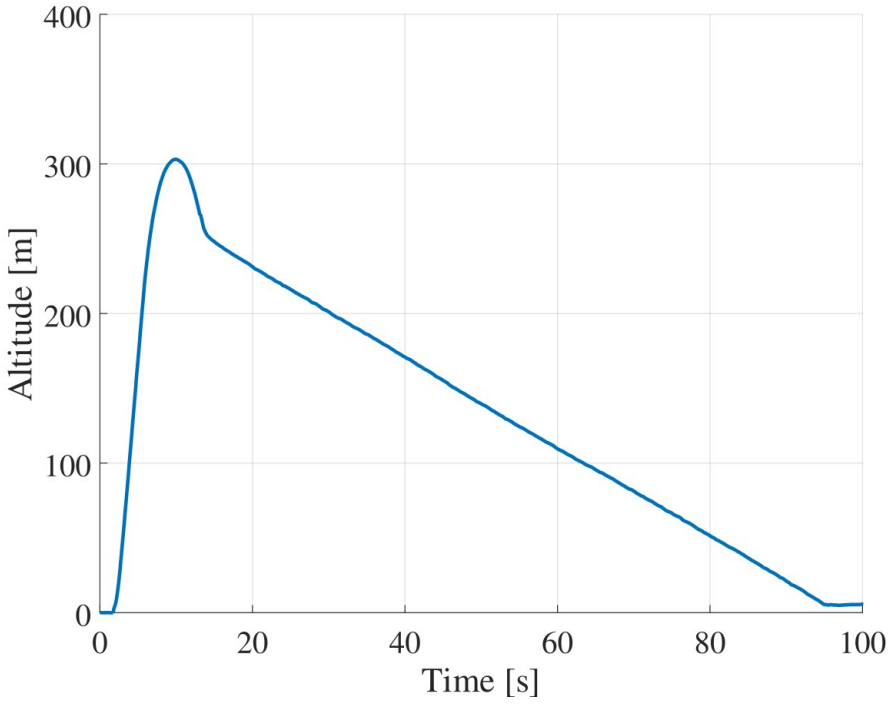

Figure 3 - *Category B rocket motor flight diagram*

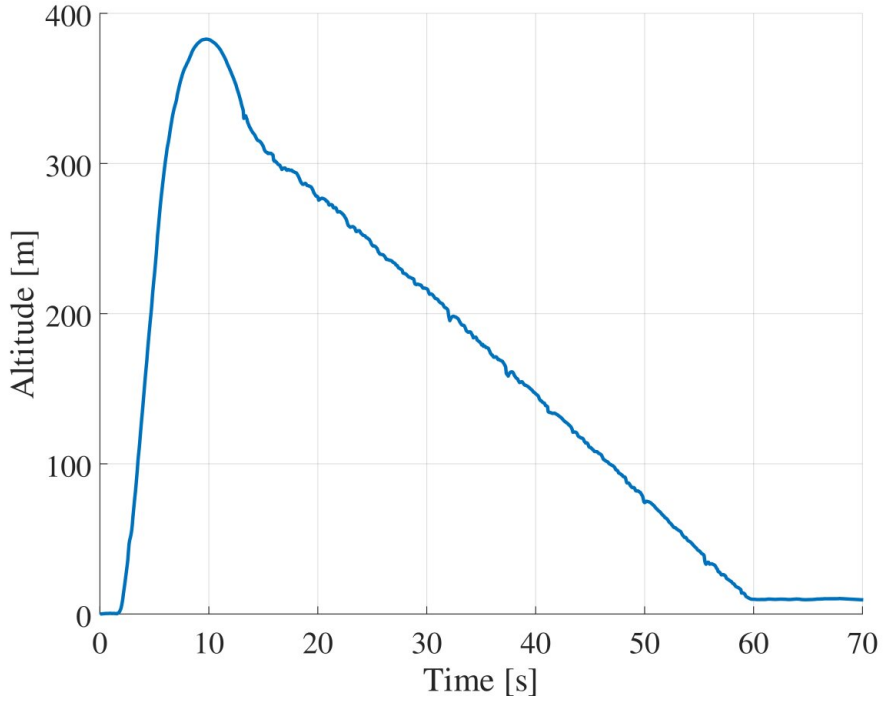

Figure 4 - *Category C rocket motor flight diagram*

5. Equipment

wAltimeter system consists of a radio receiver (base station), fast battery charger and several measuring devices. Both radio receiver and battery charger are easily connected to a PC using a standard USB type C cable. Data reading and analysis software is provided by **PR-DC**. The software plots diagrams in real-time while always showing the maximum altitude. At the end of a flight, diagrams and data logs are saved using a chosen data format.

Figure 5 - *Fast battery charger and receiver*